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ABSTRACT

Conducted on over 3,000 fourth, fifth, and sixth grade children in six states, this study documents changes in nutrition-related knowledge and behaviors which can be related to participating in the Mulligan Stew television series. This volume is a detailed elaboration of the study findings as well as a description of the study design, instrumentation, and procedures. The study consisted of three general segments: (1) impact evaluation of the series on children; (2) case studies of delivery system and associated cost data; and (3) content analysis. The impact evaluation explored the hypotheses that children who viewed the series would exhibit positive changes in knowledge about nutrition and changes in nutrition-related behaviors and that these children would show an increased amount of awareness of and interest in 4-H. Although the impact evaluation focused on children, information was also elicited from their teachers. The case studies segment focused on the distribution system associated with the program, i.e., delivery and costs. While the delivery system, organizational arrangements, and associated cost data were not critical to the impact study, they did serve to provide context data for other purposes. A content analysis of the films was conducted to assess the nutrition information contained in the films, the pedagogic approach used, and the production techniques employed. The three major sections of this volume examine each of the aforementioned segments separately. A concluding section presents a summary of major findings from each of the evaluation segments and recommendations based on these findings. (RC)

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An Evaluation of the Mulligan Stew 4-H Television Series for Extension Service, USDA

Volume II · Report of the Study

TM006 027

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AN EVALUATION OF THE MULLIGAN STEW 4-H TELEVISION SERIES
VOLUME II: REPORT OF THE STUDY

December 20, 1974

BEST COPY AVAILABLE

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Prepared For

Extension Service, U.S. Department of Agriculture
4-H Youth Development Division

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Arkansas
Missouri
Oregon
Pennsylvania
Tennessee
Texas

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Preface

On December 14, 1973, Abt Associates Inc. contracted with Extension Service, USDA, to conduct an evaluation of a 4-H television series on nutrition called Mulligan Stew. This six-part series, targeted to 4th, 5th, and 6th grade children, had been shown on local television stations across the nation during the year preceding the evaluation. While some states had conducted pilot studies or mini-studies on the impact of the series, no controlled national field study had been applied. The present report describes such a study. Conducted on more than 3,000 school-aged children in six states, the study documents changes in nutrition-related knowledge and behaviors which can be related to viewing the Mulligan Stew series.

The report consists of four volumes:

Volume I, the Executive Summary, focuses on findings and recommendations. This summary is organized to give the reader a quick overview of the main findings of the study.

Volume II, Report of the Study, is a detailed elaboration of the study findings as well as a description of study design, instrumentation and procedures.

Volume III, Case Studies, is a descriptive report of visits to the six study states to elicit information on the delivery system and costs associated with the program.

Volume IV, Documentation is a reference volume containing all prior reports, submissions, computer printouts and supporting data for the study.

Many individuals contributed to this effort. At Abt Associates Inc. the contract staff included the following:

S. Shapiro, Project Director
R. L. Bale, Deputy Project Director
V. Scardino, Deputy Project Director

L. Abrams, Analyst
T. Cerva, Analyst
M. Conti, Analyst
K. Hewett, Analyst
D. Thomson, Analyst
J. Dwyer, Ph.D., Consultant
V. Horner, Ph.D., Consultant
A. Ziolkowski, Secretary

The core staff (Bale, Cerva, Scardino) has been associated with the project and has worked closely with the project director from the beginning. A team approach was maintained throughout; that is, the core staff was intimately involved in all aspects of the study. Each of them also took on specific responsibilities as well.

Dick Bale engineered the site selections and initial field visits as well as the double mailings required in the field effort. In addition, his conceptualization of the analytic approach served as the model for the specific analysis undertaken.

Vince Scardino had heavy input into the design of the instruments and was in charge of check-in, coding, and editing of the student pre- and post-test instruments.

Tom Cerva developed the prototype case study and was senior programmer for the impact evaluation. All computer runs other than the cross-tabulations were programmed and run by him.

Day Thomson, who joined the project for the case study visits, has acted as coordinator of the case studies as well as preparing statistical summary tables from the cross tabulations.

The staff with the able assistance of Ms. Ziolkowski has worked as a team in the writing and production of this final report. However, some concentration of effort was planned. Thus Vince Scardino focused on the Executive Summary; Ms. Thomson's efforts were primarily addressed to the Case Study volume; and T. Cerva, R. Bale, and S. Shapiro produced Volume II, Report of the Study. All products were reviewed by S. Shapiro, project director, before submission.

Evaluative research tends to be conducted by a study team. This study was no exception. What has been exceptional is the support and ongoing interest of the staff of Extension Service, USDA throughout the ten months of the study. Ms. Eleanor Wilson, project officer, and Drs. Evelyn Spindler and Claude Bennett, who worked with her as the Extension Service Committee on this project, were admirable colleagues in the effort. While Abt Associates Inc. must take final responsibility for this report, it owes much to the committee members, who functioned not only as reviewers but as contributors at critical points during the contract period.

In addition, Ms. Wilson, through her personal diplomacy, smoothed the way for us and by so doing helped to keep the study on schedule. We are grateful for the experience of working so productively with Extension Service.

Sydelle Stone Shapiro

Sydelle Stone Shapiro, Ph.D.
Project Director

October 15, 1974

I INTRODUCTION

Background of the Study

In 1914 the Smith-Lever Act created the Cooperative Extension Service. For more than half a century this partnership between the U.S. Department of Agriculture, the State Land-Grant Universities, and county governments served as the vehicle for providing educational information to people in their local environments, particularly in rural America. Extension in the U.S. became a unique innovation in education.

The Smith-Lever Act also provided for "boys' and girls' club work" as part of the national education program of the Cooperative Extension Service. Since the early 1900s there had been special interest clubs (corn, pig, and canning) which served as vehicles to supplement the classroom learning of young people with real-life learning experiences. With the passage of the act, these clubs became 4-H, an education program of the Cooperative Extension Service, designed to help youth become creative, productive citizens with a desire for continuing and life-long learning. Today one out of six U.S. adults can attest to the success of this informal education program of learning-by-doing.

Currently the 4-H youth education program continues to be characterized by an emphasis on the scientific "whys" and "hows" of living and doing. In addition, there is a concerted effort to encourage the participation of more youths from all economic, racial, and cultural backgrounds in small towns, suburbs, and cities, as well as farms.

Increasing numbers of young people participate in learning-by-doing through belonging to 4-H clubs. However, there are many others who also participate through special interest groups, individual projects, or day camp programs for youth. The latter two types of 4-H programs represent the shift in the focus of the Cooperative Extension Service youth education endeavor to meet the special needs of low income. This flexibility is part of the "new look" for 4-H.

One program which is designed to encourage increased youth participation in 4-H is the Expanded Food and Nutrition Education Program (EFNEP). Extension originally designed this program for hard to reach, low-income families. Beginning in January, 1969, the Extension Service began teaching homemakers how to feed their families more nutritious meals and make better use of currently available resources. This training, and the resulting enthusiasm, provided the impetus for the mobilization of thousands of new volunteers for Extension to teach nutrition to adults and youth. The youth program within EFNEP, sponsored by 4-H, has approached the challenge of teaching youth more about nutrition through a variety of means: day camp programs, tours, educational games and films.

While nutrition principles have always been taught in 4-H, the challenge of the EFNEP program was to reach many low income children as quickly and effectively as possible. 4-H turned to modern media to meet this challenge and has produced an educational TV series on nutrition called Mulligan Stew.

The Mulligan Stew Television Program

The Mulligan Stew Program evolved from a set of assumptions and objectives: assumptions about the way to teach young people and objectives concerning what was to be taught. The assumptions are as follows:

- Youngsters aged 9-11 are avid TV fans (average number viewing hours per child is 24 per week).
- If properly motivated, 9-11 year olds can alter behavior; some habits are not yet entrenched.
- At this age youngsters still have natural curiosity and are still able to build and improve self-image.
- While children still look to adults as role models, peer group values have a stronger influence on behavior.
- Repetition with modifications, as opposed to rote learning, is the best way to insure learning. Thus mere repetition of a fact is less likely to produce learning than repeating the fact in varied ways, for example:

  - Using different wording
  - Providing aural and visual stimuli
  - Speaking and singing the message
  - Adding pictures, animation, puzzles
  - Making a point in both prose and rhyme
  - Using mnemonic devices
  - Making the point with humor or exaggeration
  - Acting out the message

- Some dramatic sequence should be introduced to maintain interest if a message is complicated or requires more than a few minutes of time.

The objectives of the program are both immediate and long range. The immediate objectives are to teach the child:

- Facts about food and nutrition
- To value correct nutritional habits
- To act on his knowledge and values

Long range objectives include the educational and social objectives of 4-H, as well as eventually meeting the special needs of certain sectors of the population. Through participation in this 4-H sponsored program it is hoped that the targeted youth between the ages of nine and eleven will:

- Acquire and apply nutrition knowledge which will help them to become healthful, productive individuals;
- Gain personal satisfaction from their awakened curiosity and growing knowledge about the information presented;
- Accept themselves and others by recognizing similarities and differences between peoples which influence food habits;
- Learn more about family members through interactions when participating in food experiences;
- Recognize the importance of relating to their peers.

The programs are designed to appeal to 9-11 year olds. They feature five youngsters to whom children can relate as peers. Although a variety of adults appear in the six programs, only one adult, Wilbur, appears in all programs. There are several minority group children, including one black and one Oriental. They work together as a gang of troubleshooters (the troubles are nutritional) and they exhibit great esprit de corps. The gang plays together as a rock group and the songs are all about nutrition. Some of them, repeated through all six reels, are direct teaching devices (e.g., "4-4-3-2" and "It's Up to You".)

Auxiliary materials were developed to augment the effects of the six films. For example, a member's manual was developed for the participating children. This manual, actually a comic book, repeats much that is in the films, as well as provides additional activities, such as puzzles and games, constructed around the theme of nutrition. Other auxiliary materials developed include a teacher's guide, records, sheet music, posters, pins, and certificates. All of these reiterate the nutritional messages of Mulligan Stew.

Purpose of the Study

During the first year of its distribution, Mulligan Stew was shown in sixteen states through seventy-two television stations. Eight of the sixteen states conducted some form of program evaluation. These evaluations ranged from asking teachers what they thought of the program to pilot studies using pre-post designs. No formal large-scale impact evaluation was attempted, however.

Extension Service, while aware of the enthusiasm the program engendered, wanted to assess both the impact of the program on the target group and the distribution procedures employed by the states. During the course of this assessment, it was anticipated, policy relevant information would emerge. Accordingly, three high priority objectives shaped the research approach. These were:

- To provide a clear-cut assessment of the educational impact of Mulligan Stew;

- To provide a description of the Extension Service and 4-H effort to deliver the series to the target audience, and,

- To provide recommendations concerning the most effective and efficient ways of getting Mulligan Stew, or future TV programs, delivered to the target audience, and to pinpoint the conditions which maximize impact.

II OVERVIEW OF THE STUDY

The Mulligan Stew evaluation study consists of three general segments:

Impact Evaluation of Mulligan Stew Series on Children
Case Studies of Delivery System and Associated Cost Data
Content Analysis

The impact evaluation was designed to explore the following general hypotheses:

Children who view the series will exhibit positive changes in knowledge about nutrition and changes in nutrition-related behaviors. These changes will be differentially affected by viewing condition (in school, at home); use of auxiliary materials (comic book, no comic book); grade level (4th, 5th, 6th).

Children who view the series will show an increased awareness of and interest in 4-H.

Even though the impact evaluation focuses on children, information was also elicited from their teachers. Since educational TV programs are frequently shown during school time, the interest and opinions of the teachers are important. Teacher-initiated activities associated with the Mulligan Stew programs were documented via a weekly activities log maintained by teachers of the experimental classes. In addition, a teacher record form (TRF) elicited the opinions of the teachers on the programs and auxiliary materials.

The data obtained through the weekly log and TRF is descriptive and, for the present report, is best viewed in the aggregate. Of interest is teachers' rating of the program, comic book and teacher manual along several dimensions and teachers' general comments about the students' reaction to the program. This material will be presented within the context of the impact segment of the evaluation.

The case studies segment of the evaluation focuses on the distribution system associated with Mulligan Stew, i.e., delivery and costs. While the delivery system, organizational arrangements and associated cost data are not critical to an impact study, they do serve to provide context data for other purposes.

In the event that Extension Service continues its development of TV programming,it will want to maximize both national distribution and state-by-state interest and involvement to reach the target audiences of the program. Extension Service is also concerned that the costs of such efforts are appropriate to the coverage and effects of such programming. In order to get some sense of what some of the states have done with Mulligan Stew and to recapture the related costs, site visits were conducted in each of the six states of the impact study. Detailed reports of this segment of the evaluation are contained in Volume II.

A content analysis of the films was conducted to assess the nutrition information contained in the films, the pedagogic approach used in the films, and the production techniques employed. The content analysis focused on what was in the films themselves. Of interest were answers to the following questions:

What were the nutritional messages of the series?

What non-nutritional messages were contained in the series?

What production techniques were employed?

What changes in future TV efforts are recommended as
regards content, format, production?

In the three major sections which follow, each of the segments of the evaluation will be examined. A concluding section will present a summary of major findings from each of the evaluation segments and Abt Associates'recommendations based on these findings.

III IMPACT EVALUATION

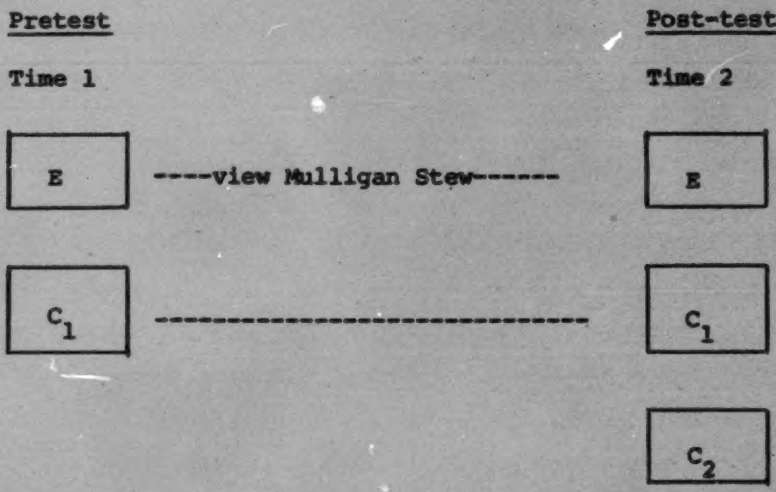
Basic Design

A pre-post experimental design using two types of control groups was employed. The variables explored are listed below:

Grade level (4th, 5th, 6th)
Viewing condition (At Home/In School)
Use of auxiliary materials (Comic Book/No Comic Book)

Experimental groups viewed the program under various conditions. Control groups did not view the program nor were they given any auxiliary materials. The experimental groups were measured both before and after they viewed Mulligan Stew, i.e., in a pretest/post-test situation.

The design also included two types of control groups. The first type of control group received the same pretest and post-test that the experimental groups received. The second type of control group received only the post-test, administered at the same time as the other control groups received theirs. The paradigm for this evaluation is:



The rationale for this design is as follows. The application of both pre- and post-viewing measurements to the experimental groups enables one to address, directly and unambiguously, the question of whether or not there are changes in nutrition-related knowledge, attitudes and behavior after Mulligan Stew has been viewed. Without the pretest/post-test comparison there would be no defensible basis for assessing such change.

The use of two types of control groups achieves two objectives. The control groups which receive both a pretest and a post-test provide the basic standard against which the changes observed in the experimental groups are compared. If these control groups show the same kinds and degree of change in nutrition-related knowledge, attitudes and behavior as do the experimental groups, it is impossible to argue that viewing Mulligan Stew has been the cause of changes. On the other hand, if the control groups show little or no changes relative to the experimental viewing groups, one is able to argue that indeed the viewing of Mulligan Stew is the causal agent inducing desired changes concerning nutrition-related knowledge, attitudes and behavior. The lack of significant change in the control groups has ruled out competing explanations (such as other extraneous events, reading a book, talking to friends, etc.) for the changes observed in the viewing groups.

The use of the second type of control group, which receives only a single test at the time the other control and experimental groups receive their post-tests, protects against a different kind of problem. It is possible that the process of taking the pretest in itself could arouse sufficient curiosity among the control groups to cause many children to seek out the correct answers to the items in the test, i.e., sensitization as a result of the pretest. These children would then score higher on the post-test than if they had not been sensitized by the pretest. Since this is the group that basically provides the standard against which the experimental groups' gains are compared, spurious gains shown by this group will cause the gains made by the viewing group to appear to be smaller than they really are. This would reduce the apparent effectiveness of Mulligan Stew. The use of the post-test-only control group allows us to detect this situation and make appropriate corrections for it.

Table 1 which follows details the design.

TABLE 1

DESIGN FOR THE "MULLIGAN STEW" EVALUATION

	FOURTH GRADE Experimental Group = 583 Control Group = 234		FIFTH GRADE Experimental Group = 631 Control Group = 256		SIXTH GRADE Experimental Group = 609 Control Group = 258	
	In-School Viewing (N=330)*	At-Home Viewing (N=253)	In-School Viewing (N=346)	At-Home Viewing (N=285)	In-School Viewing (N=345)	At-Home Viewing (N=264)
Comic Book Text Used						
Comic Book Text Not Used						
Pre-Test/ Post-Test Control Groups						
Post-Test Only Control Groups						

* N=number of subjects analyzed

Field Procedures

Selecting the Sites

Six sites representing diverse geographic locations were selected for the study. Selection of sites for the national evaluation of Mulligan Stew proceeded on a purposive sampling basis. To be included in the study, sites had to satisfy the following criteria:

- Representation from each of the major cultural/ geographic regions of the country;
- Both urban and non-urban areas were to be represented within each region;*
- The Mulligan Stew series was not to have been shown in the area previously;
- The Mulligan Stew series either had to be currently scheduled for broadcast at a time compatible with the time lines for the evaluation study, or the scheduling of such broadcasts had to be feasible;
- Each viewing and control condition in the experimental design was to be represented within each site.

It did not, however, take reality long to impose its inexorable constraints upon the site selection process. On the basis of viewing statistics in the 1973 report on Mulligan Stew prepared by the National 4-H Service Committee, several states were excluded from immediate consideration as sites because of heavy viewing exposure prior to the awarding of the evaluation contract.

Telephone and mail contact made with the 4-H State TV Coordinators or other state level 4-H staff in over 20 of the remaining states revealed three primary problems in terms of site selection:

- Extensive viewing of the Mulligan Stew series had occurred in several states since the statistics presented in the National 4-H Service Committee report had been compiled;
- The broadcast schedules in many states were incompatible with the time demands of the evaluation study. (It was learned rather quickly that most television broadcast schedules are cast in concrete far in advance.)

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* Non-urban sites were selected from areas which contained fewer than 100,000 residents. Two of the four non-urban sites selected were of rural nature; i.e., Eastern Arkansas and the fringe area surrounding Memphis.

- In locations where the broadcast schedule for the series was compatible with the evaluation study time lines, or such a schedule could be arranged, broadcast schedules that would allow simultaneous in-school and at-home viewing were not feasible.

These problems rendered the ideal criteria for site selection, as well as their relation to the experimental design, unachievable, and a series of negotiations and trade-offs among Abt Associates and national, state and county Extension staff took place in an attempt to maximize the integrity of the research design as originally specified. As a result of these negotiations, sites were selected in Arkansas, Missouri, Oregon, Pennsylvania, Tennessee and Texas.

Organizing the Field

State and/or district and county Extension staff in these states were then asked to arrange for the participation of the 111 classes in 24 schools under the experimental conditions indicated in Table 2 below, with the additional stipulation that schools should be selected so that children from a broad range of ethnic and SES backgrounds would be represented. So far as possible, using the random assignment technique, schools were placed within one or another of the experimental or control conditions. The Extension staff in these states engaged in a tremendous amount of work, in a spirit of cooperation and goodwill, and were able to produce 104 of the 111 classes originally requested, as indicated in Table 3 below.

In Tennessee, where the series was broadcast from Memphis on Saturdays for at-home viewing, participation of a school outside the broadcast area (Decaturville, Tennessee) was secured as a control. It was impossible to find a school within Memphis to serve as a control, since the series was being broadcast at a time when any child who wished to watch the broadcast could do so. This circumstance resulted in the loss of three control classes from the Memphis area.

In Pennsylvania, where there had already been heavy viewing prior to the start of this evaluation, four of the classes originally requested were impossible to find -- three classes viewing in school without the comic/workbooks and one class viewing in school with the comic/workbook. The number of schools that had not previously had their children viewing

TABLE 2

MULLIGAN STEW NATIONAL EVALUATION

Sites, Schools and Classes* By Viewing Conditions, By Urban/Non-Urban, By Testing Type

*Classes: refers to the number of classes in each of grades 4, 5 and 6 within a school

	URBAN	NON-URBAN
IN-SCHOOL VIEWING	15 1. ST. LOUIS (3 schools: 9 experimental and 6 control classes) ● School 1: 2 classes viewing and comic book ● School 2: 1 class viewing and no comic book ● School 3: 2 control classes (1 pre-and post, 1 post only) ● Broadcast starts March 13, 1974 15 2. PORTLAND (3 schools: 9 experimental and 6 control classes) ● School 1: 1 class viewing and comic book ● School 2: 2 classes viewing and no comic book ● School 3: 2 control classes (1 pre-and post, 1 post only) ● Broadcast starts April 15, 1974	18 1. ALTOONA, PENN. (3 schools: 12 experimental and 6 control classes) ● School 1: 2 classes viewing and comic book ● School 2: 2 classes viewing and no comic book ● School 3: 1 pre-post control class, and 1 post-only control class ● Broadcast starts April 2, 1974 18 2. LAREDO, TEXAS (3 schools: 12 experimental and 6 control classes) ● School 1: 2 classes viewing and comic book ● School 2: 2 classes viewing and no comic book ● School 3: 1 pre-post control class, and 1 post-only control class ● Broadcast starts ____________
AT-HOME VIEWING	9 1. SAN ANTONIO (3 schools: 6 experimental and 3 control classes) ● School 1: 1 class viewing and comic book ● School 2: 1 class viewing and no comic book ● School 3: 1 pre-post control class ● Broadcast starts March 9, 1974 9 2. MEMPHIS (3 schools: 6 experimental and 3 control classes) ● School 1: 1 class viewing and comic book ● School 2: 1 class viewing and no comic book ● School 3: 1 pre-post control class ● Broadcast starts March 9, 1974	18 1. EASTERN ARKANSAS (3 schools: 12 experimental and 6 control classes) ● School 1: 2 classes viewing and comic book ● School 2: 2 classes viewing and no comic book ● School 3: 1 pre-post control class, and 1 post-only control class ● Broadcast starts March 9, 1974 9 2. MEMPHIS AREA (3 schools: 6 experimental and 3 control classes) ● School 1: 1 class viewing and comic book ● School 2: 1 class viewing and no comic book ● School 3: 1 pre-post control class ● Broadcast starts March 9, 1974

TABLE 3

CLASSES BY SITE BY EXPERIMENTAL CONDITION

SITE/GRADE		EXPERIMENTAL				CONTROL		
		In School, With Comic	In School, Without Comic	At Home, With Comic	At Home, Without Comic	Pre-Post	Post Only	
Tennessee	4			2* (2)**	2 (2)	1		
	5			2 (2)	2 (2)	1		
	6			2 (2)	2 (2)	1		
Arkansas	4			2 (2)	2 (2)	1	1	
	5			2 (2)	2 (2)	1	1	
	6			2 (2)	2 (2)	1	1	
Missouri	4	2 (2)	1 (1)			1	1	
	5	2 (2)	1 (1)			1	1	
	6	2 (1)	1 (1)			1	1	
Texas (S.A.)	4			1 (1)	1 (1)	1		
	5			1 (1)	1 (1)	1		
	6			1 (1)	1 (1)	1		
Texas (L.)	4	2 (2)	2 (2)			1	1	
	5	2 (2)	2 (2)			1	1	
	6	2 (2)	2 (2)			1	1	
Pennsylvania	4	2	1			1	1	
	5	1	1			1	1	
	6	2	1			1	1	
Oregon	4	1 (1)	2 (2)			1	1	
	5	1 (1)	2 (2)			1	1	
	6		3 (3)			1	1	
TOTAL		19 (13)	19 (16)	15 (15)	15 (15)	21	15	104 (59)

*Number of classes

**Number of Teacher Record Forms returned the series was limited. As a result, one of the schools that participated did so with only one fifth grade group (resulting in the loss of one class in the in-school viewing with comic/workbook situation), and another school that participated under the in-school viewing without the comic/workbook criterion had only one class in each of grades four, five and six (which accounts for the other three classes which were unobtainable).

In San Antonio, Texas, where the series was being broadcast on weekends for at-home viewing, the problem of finding control classes that would not be able to view the series was resolved with a great deal of ingenuity on the part of the Extension staff there. Participation as a control group was secured from the Seventh Day Adventist Jr. Academy in San Antonio. The children attending this school were virtually all in church during the times the Mulligan Stew series was broadcast (on Saturday mornings).

In Laredo, Texas, the school system has its own closed circuit television broadcast system, and arrangements were made to have the series shown in school. Thus Texas became the only state in which it was possible to implement the complete experimental design. Laredo poses a unique situation, however, in that during the negotiations with school representatives and the TV programming director on the initial site set-up visit, the programming director insisted that the series be shown at the rate of two shows each week (as opposed to the one show per week schedule in all other sites).

In eastern Arkansas, which was viewing the series on the Memphis-originated broadcast, the control classes also had to be found in a location outside the broadcast range. As a result, the elementary school in Cherokee Village, in the extreme north-central part of the state, was selected for participation.

Table 4 below shows the distribution of sites and number of subjects* in each site, analyzed by grade level and experimental condition. The sample sizes in each of the cells provide excellent approximations to equality, especially for an experiment in a natural setting. The only idiosyncracy

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*"Subjects" whenever used in this study refers to the youth who participated in the impact evaluation.

TABLE 4

DISTRIBUTION OF SITES AND SUBJECTS BY EXPERIMENTAL CONDITION

	FOURTH GRADE Experimental Subjects = 583 Control Subjects = 234		FIFTH GRADE Experimental Subjects = 631 Control Subjects = 256		SIXTH GRADE Experimental Subjects = 609 Control Subjects = 258	
	In-School Viewing (N=330)*	At-Home Viewing (N=253)	In-School Viewing (N=346)	At-Home Viewing (N=285)	In-School Viewing (N=345)	At-Home Viewing (N=264)
Comic Book Text Used	Missouri 49* Pennsylvania 41 Oregon 28 Texas (L)** 66 184	Tennessee 54 Arkansas 53 Texas (SA)** 19 126	Missouri 51 Pennsylvania 35 Oregon 28 Texas (L) 70 184	Tennessee 57 Arkansas 61 Texas (SA) 27 145	Missouri 57 Pennsylvania 41 Oregon -- Texas (L) 73 171	Tennessee 55 Arkansas 46 Texas (SA) 26 127
Comic Book Text Not Used	Missouri 19 Pennsylvania 26 Oregon 41 Texas (L) 60 146	Tennessee 56 Arkansas 41 Texas (SA) 30 127	Missouri 28 Pennsylvania 32 Oregon 38 Texas (L) 64 162	Tennessee 56 Arkansas 52 Texas (SA) 32 140	Missouri 22 Pennsylvania 20 Oregon 74 Texas (L) 58 174	Tennessee 60 Arkansas 48 Texas (SA) 29 137
Pre-Test/ Post-Test Control Groups	Tennessee 19 Arkansas 30 Missouri 15 Texas 26 Pennsylvania 16 Oregon 6 112		Tennessee 24 Arkansas 19 Missouri 18 Texas 33 Pennsylvania 14 Oregon 15 123		Tennessee 29 Arkansas 28 Missouri 21 Texas 36 Pennsylvania 5 Oregon 23 140	
Post-Test Only Control Groups	Tennessee -- Arkansas 32 Missouri 25 Texas 24 Pennsylvania 24 Oregon 17 122		Tennessee -- Arkansas 31 Missouri 25 Texas 26 Pennsylvania 29 Oregon 22 133		Tennessee -- Arkansas 29 Missouri 23 Texas 22 Pennsylvania 23 Oregon 21 118	

* N=number of subjects analyzed

** L=Laredo; SA=San Antonio

to be noted is that there is no sixth grade class in Oregon viewing in-school with use of the comic/workbook. The class originally slated to fill this condition was located in a school participating in the evaluation in which all other classes were not using the comic/workbook. This class was therefore changed to the no comic/workbook situation, rather than take the chance of having the comic books read by the other participating children in the school who were not supposed to be using it.

Table 5 below presents basically the same information as Table 4, but in a slightly different form emphasizing the distribution of classes and subjects by experimental condition. Table 5 also shows that the sample sizes of each of the experimental conditions are very well balanced, particularly for an experimental design conducted in a natural setting.

Abt Associates concludes that the overall integrity of the experimental design has been preserved to a great extent. The most serious potential exception is the fact that all experimental conditions could not be implemented within each site. This poses a problem, however, only if one expects the variation in children to be greater across sites than it is within sites. If this is the case then the effects of viewing Mulligan Stew are confounded with the effects of geographic location, and the two cannot be separately identified. For example, if only one site was assigned to "In School Viewing" it would be impossible to tell whether differences in performances of this group were attributable to the experimental treatment or characteristics of the site. Because no experimental condition has fewer than three sites assigned to it, this problem is not anticipated.

Implementing the Study

Once site selection had been accomplished and the participation within each site of specific schools and classes in given experimental conditions was confirmed, initial site set-up meetings were planned for each site.

The site set-up meetings were scheduled to take place approximately 2-4 weeks prior to the beginning date for the local Mulligan Stew broadcast. The meetings were arranged so that the Abt Associates director of field operations, accompanied by a state and/or local Extension person, could work with the

TABLE 5

DISTRIBUTION OF SUBJECTS AND CLASSES BY EXPERIMENTAL CONDITION

	FOURTH GRADE Experimental Subjects = 583 Control Subjects = 234		FIFTH GRADE Experimental Subjects = 631 Control Subjects = 256		SIXTH GRADE Experimental Subjects = 609 Control Subjects = 258	
	In-School Viewing (N=330)*	At-Home Viewing (N=253)	In-School Viewing (N=346)	At-Home Viewing (N=285)	In-School Viewing (N=345)	At-Home Viewing (N=264)
Comic Book Text Used	184 Subjects (7 classes)	126 (5)	184 (6)	145 (5)	171 (6)	127 (5)
Comic Book Text Not Used	146 (6)	127 (5)	162 (6)	140 (5)	174 (7)	137 (5)
Pre-Test/ Post-Test Control Groups	112 (7)		123 (7)		140 (7)	
Post-Test Only Control Groups	122 (5)		133 (5)		118 (5)	

* N=number of subjects analyzed

school coordinator for each participating school. The school coordinators were teachers selected from each school who acted as liaison field staff for the study. The meetings covered the following items:

- An explanation of the purpose and nature of the national evaluation of Mulligan Stew;
- The School Coordinator's Manual, which was examined and discussed;*
- The test booklet, which was discussed, along with test administration procedures;
- The responsibilities of the school coordinators;
- The logistics of getting test materials to and from the schools.

Information needed for the preparation of individual packets of testing materials for each participating teacher/class within each school was collected. It was also emphasized several times during each site set-up meeting that the school coordinator should call collect to Abt in the event of any questions or problems.

Boxes containing a testing packet for each teacher/class within a school were subsequently shipped to school coordinators for distribution to participating teachers. The school coordinators then met with participating teachers to conduct a training session and go through the Group Experimenters Manual to ensure a common understanding of the testing procedures to be followed before the tests were administered by the teachers to their pupils. The dates for pretest and post-test administration were agreed upon during the initial set-up visits.

Make-up tests were given on the following day to pupils absent on scheduled testing days. After the day specified as the make-up day, school coordinators collected all testing materials from the teachers and shipped the complete packets back to Abt Associates. Copies of the School Coordinator's Manual and the Group Experimenter's Manual are contained in Volume IV, Documentation.

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*This manual described fully the duties of the school coordinator and included a six-step procedure for conducting the field effort.

Instruments Employed

Two instruments were employed in the impact evaluation. The first, used for pre-post tests, was addressed to students. The second, distributed at the time of the post-test, was addressed to teachers.

Student Instrument: The student instrument, in combination with the experimental variables, was designed to address the following questions:

- Is Mulligan Stew a useful teaching device? Does it teach children nutrition facts? How can it be improved?
- Do children like the program as well as learn from it?
- Does it make any difference whether Mulligan Stew is viewed at home or at school?
- Does it make any difference whether children use auxiliary materials (e.g., comic book on nutrition) or not?
- Do experimental children (who watch Mulligan Stew evidence more change in nutritional and food-related activities than control children (who do not watch Mulligan Stew)?
- Do experimental children show greater awareness and/or interest in 4-H activities than control children?

The instrument is composed of five sections:

Part I: Things you Do. The purpose of this section is to obtain indicators of food and nutrition related behavior engaged in by the child. Analytically, changes in such behavior from pre-test to post-test were assessed among controls and various experimental conditions.

Part II: Things You Would Like to Eat. The purpose of this section is to assess the nutritional adequacy of a complete day's food intake as selected by the child when he has free choice, with emphasis on pre-test to post-test change. Food choices selected for the day are coded into basic food groups and the nutritional balance and adequacy scored as defined by the 4-4-3-2 food group servings formula.

Part III: About Food and Nutrition. The purpose of this section is to assess the gain in knowledge about food and nutrition from pre-test to post-test. The correct answers to the items in each section were added together for a total score, and pre-test to post-test gains were assessed.

Part IV: About Mulligan Stew. This section of the child instrument is different for the pre-test and the post-test situation. The pretest version contains a single item to ascertain how much previous exposure a child has had to the Mulligan Stew series.

The purpose of the post-test version of Part IV is to ascertain how many (and which) shows in the series a child has seen, what he liked most about the shows, and whether other members of his family viewed any of the shows. These variables (with the exception of which aspects of the shows were liked best) will be used as additional predictor variables in analyzing gains in knowledge about food and nutrition, changes in food selection given free choice, and changes in food and nutrition related behavior.

Part V: Some Final Questions. The purpose of this section is to ascertain the child's awareness of and interest and participation in 4-H; activities with peers related to food and nutrition; and whether the child had previously studied nutrition in school.

Document A which follows is a copy of the student instrument (post-test form). Table 6 below summarizes each item in the student instrument referenced against analytic areas.

Table 6. Items Cross-Referenced Against Analytic Areas.

Analytic Area	Item
● Breakfast eating patterns	I-1, 4a, 4b
● Snack eating patterns	I-2, 3
● Food exploration	I-5
● Meal preparation	I-6, 7, 8
● Affect on day of testing	I-9
● Food selection (nutritional balance of food intake given free choice)	II-1, 2, 3, 4
● Food and nutrition knowledge	III - all items
● Exposure to "Mulligan Stew" (pre-test)	IV-1a, 1b
● Exposure to "Mulligan Stew" (post-test)	IV-1a, 1b, 2
● Aspects of "Mulligan Stew" liked best (post-test)	IV-3
● Exposure of other family members to "Mulligan Stew" (post-test)	IV-4, 5
● How well liked "Mulligan Stew" (post-test)	IV-7
● Other "Mulligan Stew" activities (post-test)	IV-8, 9, 10
● 4-H activities in which participated	V-1, 2
● 4-H activities in which child would like to participate	V-3
● Attitude toward peers related to food	V-4
● Food-related activities with peers	V-5
● Previous study of food and nutrition	V-6

ABT ASSOCIATES INC.
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CAMBRIDGE, MASS. 02138
2/6/74

OMB No. 40-S74004
Approval Expires June, 1974

☐☐☐☐
01 02 03 04

☐☐
05 06
Pupil ID

W-2
07 (2)
CD-1
08 (1)

Please Print
Your Name ______________________________
(First Name) (Last Name)

Your Age ________ 09/10
Boy ☐ 11-1
Girl ☐ -2
Today's Date ____________________

School or Group ______________________________ Grade ____________

12/13 ______
14/15 ______
16 ______
17 ______
18 ______
19 ______
20 ______

Hello!

We are conducting a survey in your area and need your help. Please answer the questions in this booklet so that we can learn more about what young people eat.

This is not a test. There will be no grades or scores. Thank you for helping us.

Part I: THINGS YOU DO

CD-1 CONT

1. Did you eat or drink anything for breakfast *yesterday?*

Yes ☐ 21-1
No ☐ -2

2. Did you eat or drink any snacks like potato chips, soda pop, corn chips, or candy *yesterday?*

Yes ☐ 22-1
No ☐ -2

3. Did you eat or drink any snacks like fruit, ice cream, peanuts or milk *yesterday?*

Yes ☐ 23-1
No ☐ -2

4a. Did you eat or drink anything for breakfast *today?*

Yes ☐ 24-1 → 4b. Please tell us what you ate or drank for breakfast *today.*
No ☐ -2 ↓

☐☐☐☐☐ ☐☐
25 26 27 28 29 30 31

5. In the past few weeks, have you tried any foods that you have never eaten before?

Yes ☐ 32-1
No ☐ -2

6. Have you fixed any meals *for yourself* (like fixing your own breakfast) in the last week?

Yes ☐ 33-1
No ☐ -2

35 GO ON TO NEXT PAGE

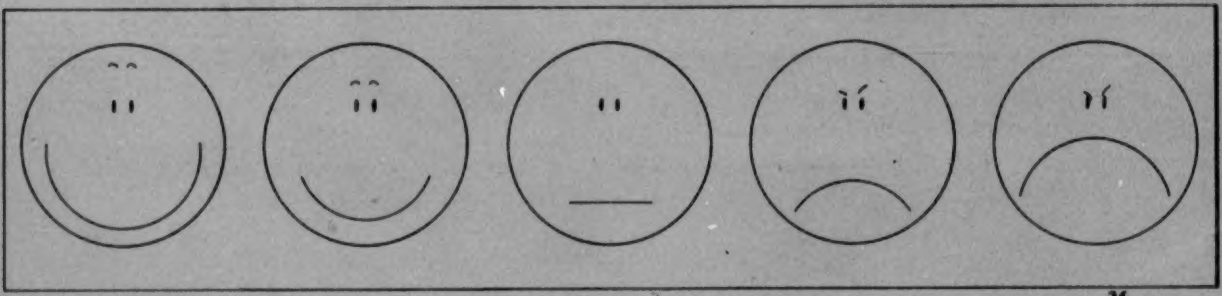
7. **Have you helped fix any *family* meals in your home in the last week?**

Yes ☐ 34-1
No ☐ -2

8. **Have you helped with any grocery shopping for your family in the last week?**

Yes ☐ 35-1
No ☐ -2

9. **Tell us how *you* feel today. Put an "X" on the one face that comes closest to the way you feel.**



36 ____
37 ____
38 ____

PLEASE WAIT FOR YOUR TEACHER TO TELL YOU WHEN TO TURN THE PAGE

Part II. THINGS YOU WOULD LIKE TO EAT

On the next 4 pages there are pictures of a lot of different foods. Each page shows the same foods.

Now, suppose you could eat anything you wanted to for all of tomorrow's meals. If you could choose *anything* you wanted to eat for breakfast, for lunch, for supper or dinner, and for a snack, what would it be? It's important to choose only as much as you, yourself, could really eat at one time.

On the BREAKFAST page put an "X" on each of the foods you would like to have for BREAKFAST tomorrow.

On the LUNCH page put an "X" on each of the foods you would like to have for LUNCH tommorrow.

On the DINNER page put an "X" on each of the foods you would like to have for SUPPER or DINNER tomorrow.

On the SNACK page put an "X" on each of the foods you would like to have for a SNACK tomorrow.

Remember now for each meal choose only as much as you, yourself, could eat.

GO ON TO NEXT PAGE

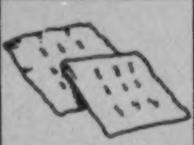
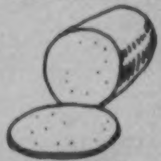
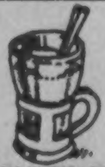
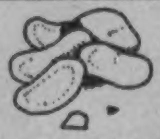
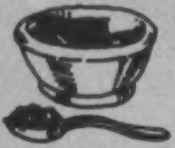
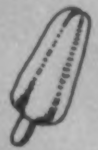
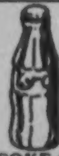
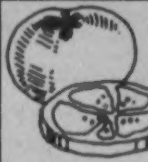
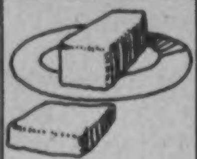
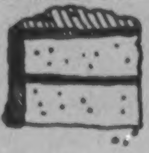
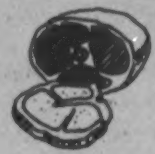
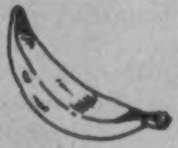
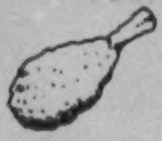
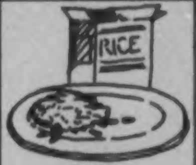
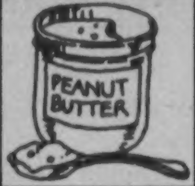
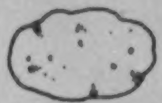
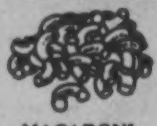
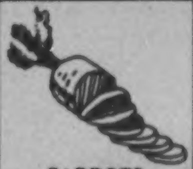
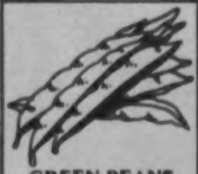
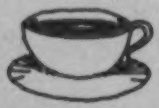
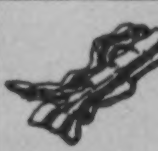
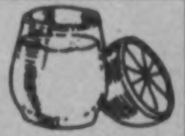
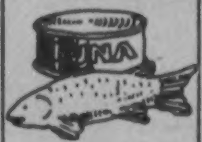
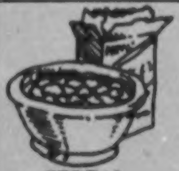
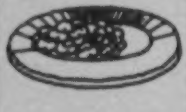
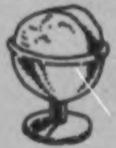
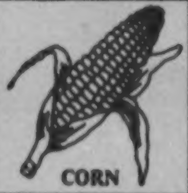
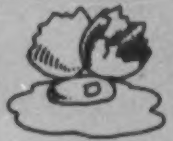
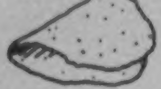
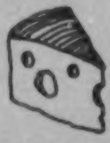
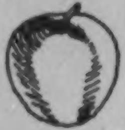
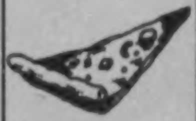
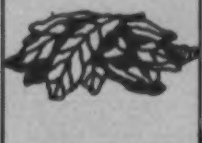
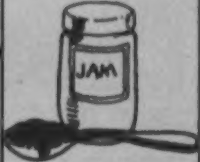
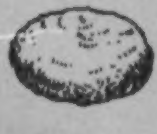
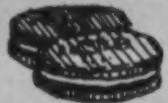
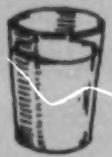
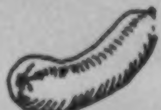
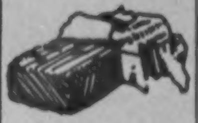
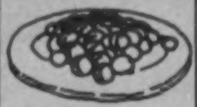
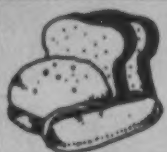
Breakfast

CD-1 CONT

☐ ☐ ☐ ☐ ☐ ☐ ☐
39 40 41 42 43 44 45

Put an "X" on each of the foods you would like to have for BREAKFAST tomorrow.

1. For BREAKFAST I would like to have . . .

 CRACKERS	 BOLOGNA	 MILK SHAKE	 POTATO CHIPS OR FRENCH FRIES	 JELLO	 POPSICLE
 COKE OR SODA POP	 TOMATO	 BUTTER	 CAKE	 PORK	 BANANA
 CHICKEN	 RICE		 POTATO	 MACARONI NOODLES OR SPAGHETTI	 CARROTS
 GREEN BEANS	 COFFEE	 BACON	NAME YOUR OWN!	 ORANGE ORANGE JUICE	 FISH
 CEREAL	 BEANS	 ICE CREAM	 CORN	 EGG	 TORTILLA
 CHEESE	 APPLE	 PIZZA	 GREENS		 HAMBURGER
 COOKIES	 MILK	 HOT DOG	 CANDY	 GREEN PEAS	 BREAD OR ROLLS

GO ON TO NEXT PAGE

Lunch

CD-I CONT

☐	☐	☐	☐	☐		☐	☐
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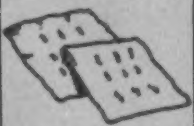
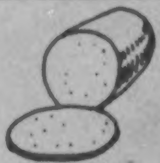
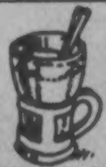
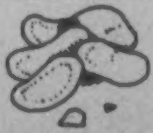
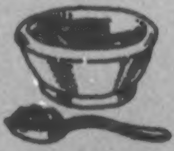
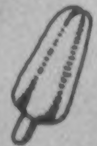
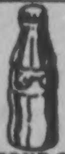
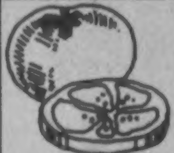
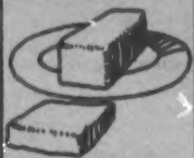
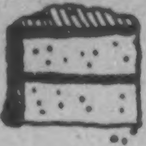
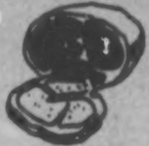
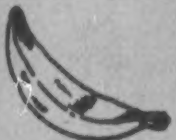
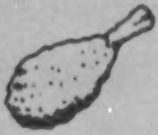
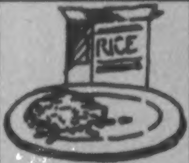
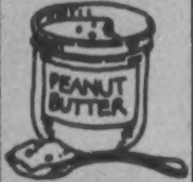
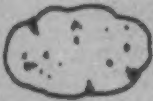
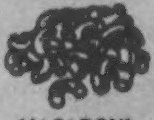
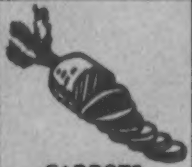
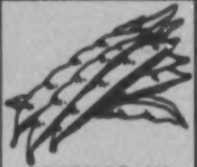
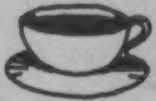
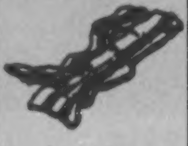
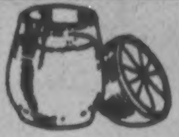
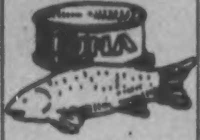
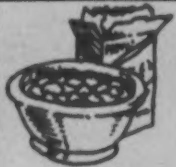
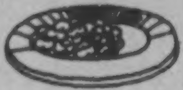
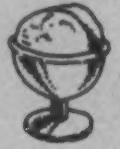
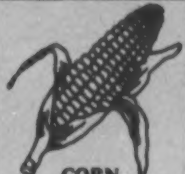
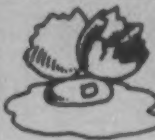
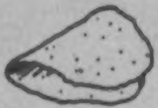
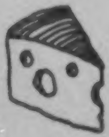
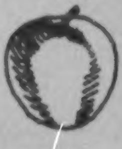
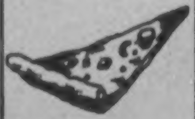
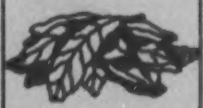
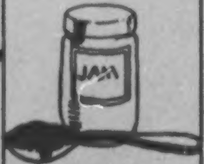
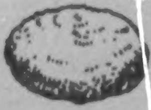
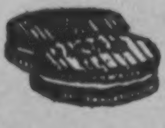
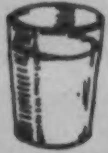
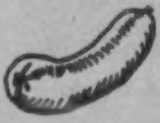
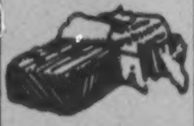
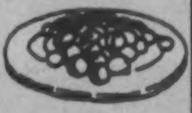
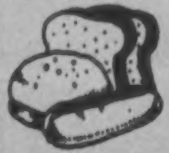
Put an "X" on each of the foods you would like to have for LUNCH tomorrow.

2. For LUNCH I would like to have . . .

 CRACKERS	 BOLOGNA	 MILK SHAKE	 POTATO CHIPS OR FRENCH FRIES	 JELLO	 POPSICLE
 COKE OR SODA POP	 TOMATO	 BUTTER	 CAKE	 PORK	 BANANA
 CHICKEN	 RICE		 POTATO	 MACARONI NOODLES OR SPAGHETTI	 CARROTS
 GREEN BEANS	 COFFEE	 BACON	NAME YOUR OWN!	 ORANGE ORANGE JUICE	 FISH
 CEREAL	 BEANS	 ICE CREAM	 CORN	 EGG	 TORTILLA
 CHEESE	 APPLE	 PIZZA	 GREENS		 HAMBURGER
 COOKIES	 MILK	 HOT DOG	 CANDY	 GREEN PEAS	 BREAD OR ROLLS

GO ON TO NEXT PAGE

Dinner or Supper

CD-1 CONT

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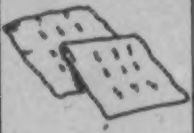
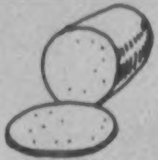
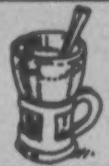
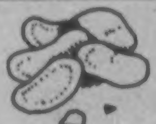
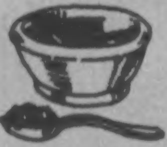
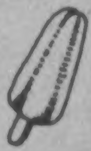
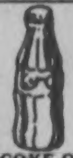
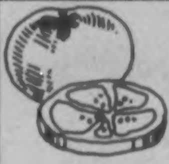
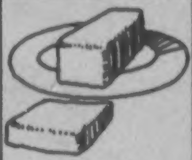
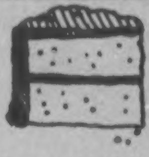
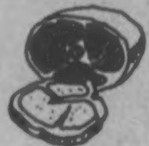
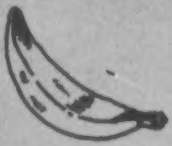
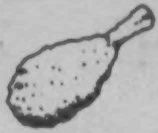
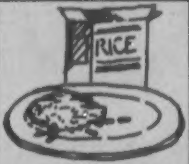
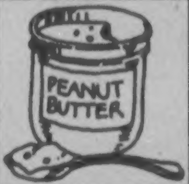
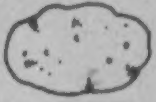
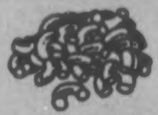
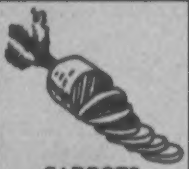
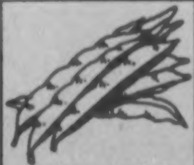
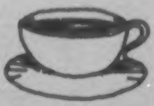
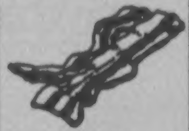
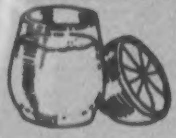
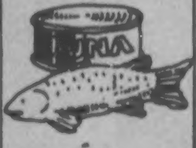
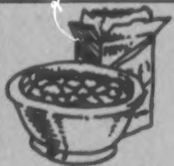
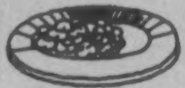
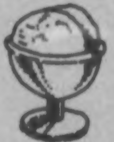
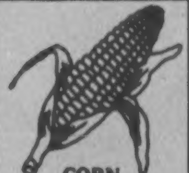
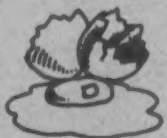
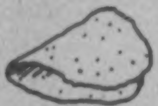
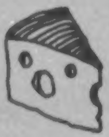
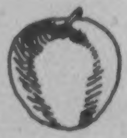
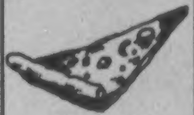
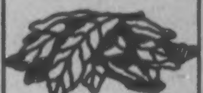
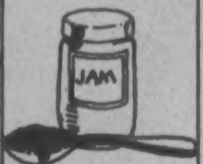
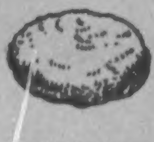
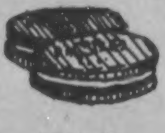
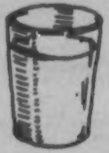
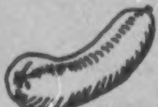
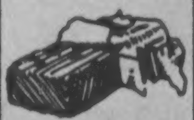
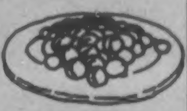
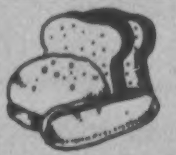
53 54 55 56 57 58 59

Put an "X" on each of the foods you would like to have for DINNER or SUPPER tomorrow.

3. For DINNER or SUPPER I would like to have . . .

 CRACKERS	 BOLOGNA	 MILK SHAKE	 POTATO CHIPS OR FRENCH FRIES	 JELLO	 POPSICLE
 COKE OR SODA POP	 TOMATO	 BUTTER	 CAKE	 PORK	 BANANA
 CHICKEN	 RICE		 POTATO	 MACARONI NOODLES OR SPAGHETTI	 CARROTS
 GREEN BEANS	 COFFEE	 BACON	NAME YOUR OWN!	 ORANGE ORANGE JUICE	 FISH
 CEREAL	 BEANS	 ICE CREAM	 CORN	 EGG	 TORTILLA
 CHEESE	 APPLE	 PIZZA	 GREENS		 HAMBURGER
 COOKIES	 MILK	 HOT DOG	 CANDY	 GREEN PEAS	 BREAD OR ROLLS

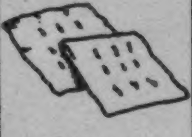
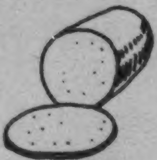
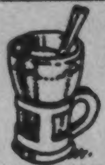
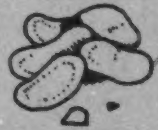
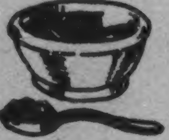
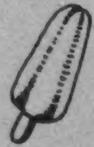
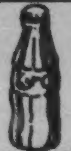
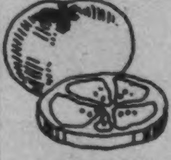
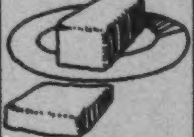
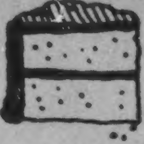
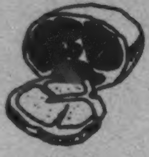
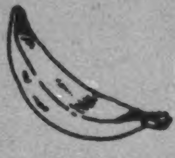
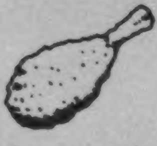
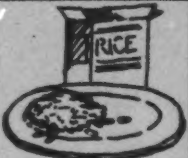
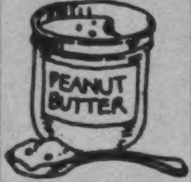
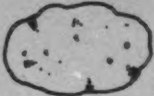
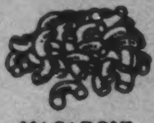
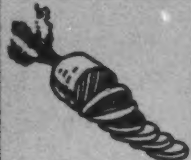
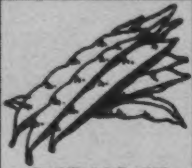
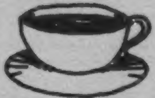
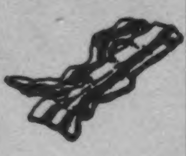
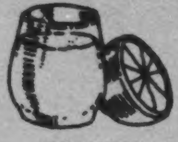
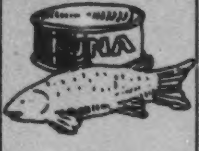
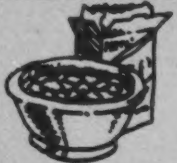
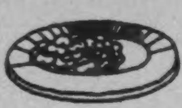
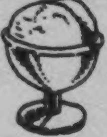
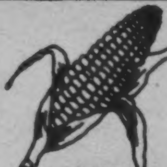
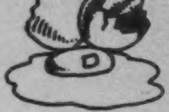
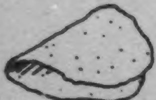
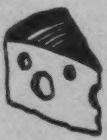
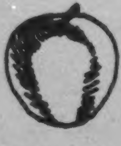
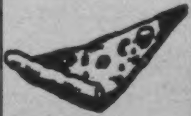
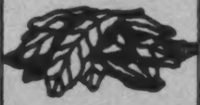
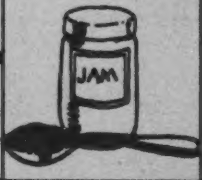
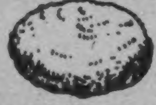
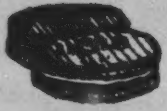
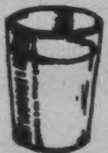
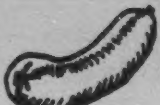
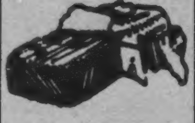
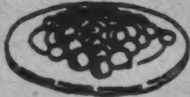
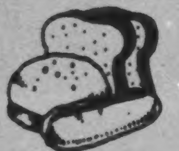
GO ON TO NEXT PAGE

Snacks

CD-: CONT ☐☐☐☐☐ 60 61 62 63 64 ☐☐ 65 66

Put an "X" on each of the foods you would like to have for SNACKS tomorrow.

4. For SNACKS I would like to have . . .

 CRACKERS	 BOLOGNA	 MILK SHAKE	 POTATO CHIPS OR FRENCH FRIES	 JELLO	 POPSICLE
 COKE OR SODA POP	 TOMATO	 BUTTER	 CAKE	 PORK	 BANANA
 CHICKEN	 RICE		 POTATO	 MACARONI NOODLES OR SPAGHETTI	 CARROTS
 GREEN BEANS	 COFFEE	 BACON	NAME YOUR OWN!	 ORANGE ORANGE JUICE	 FISH
 CEREAL	 BEANS	 ICE CREAM	 CORN	 EGG	 TORTILLA
 CHEESE	 APPLE	 PIZZA	 GREENS		 HAMBURGER
 COOKIES	 MILK	 HOT DOG	 CANDY	 GREEN PEAS	 BREAD OR ROLLS

PLEASE WAIT FOR YOUR TEACHER TO TELL YOU WHEN TO TURN THE PAGE

STOP

Part III. ABOUT FOOD & NUTRITION

CD-1 CONT

For this set of questions, mark the correct answer with an "X".

For each question, mark only *one* box.

If you don't understand a question, just skip it and go on to the next question.

---

1. Which one of these foods is the best source of Vitamin C?

Oranges . . . . . ☐ 67-1
Peanuts . . . . . ☐ -2
Milk. . . . . . . ☐ -3
Meat . . . . . . ☐ -4

---

2. Which one of these sentences do you think is correct?

Fad Diets don't make any difference to your body. . . . . ☐ 68-1
Fad Diets are bad for you because they don't provide a balanced diet . . . . ☐ -2
Fad Diets are bad for you because they make you fat . . . . ☐ -3
Fad Diets are good for you because they purify your body . . . . ☐ -4

---

3. How many food groups are there?

Two . . . . ☐ 69-1
Three . . . . ☐ -2
Four. . . . . ☐ -3
Six . . . . ☐ -4

---

4. Which one of the following helps build red blood cells?

Iodine. . . . . ☐ 70-1
Calcium. . . . . ☐ -2
Vitamins . . . . ☐ -3
Iron. . . . . ☐ -4

GO ON TO NEXT PAGE

CD-1 CONT

5. What is the number of servings of food from the Bread & Cereal Group you need each day?

2 servings each day . . . . ☐ 71-1
3 servings each day . . . . ☐ -2
4 servings each day . . . . ☐ -3
5 servings each day . . . . ☐ -4

6. Which one of these foods is the best source of protein?

Potato . . . . ☐ 72-1
Chicken. . . . . ☐ -2
Corn . . . . ☐ -3
Banana . . . . ☐ -4

7. What is the number of servings of food from the Milk Group you need each day?

2 servings each day . . . . ☐ 73-1
3 servings each day . . . . ☐ -2
4 servings each day . . . . ☐ -3
5 servings each day . . . . ☐ -4

CD-2
08 (2)

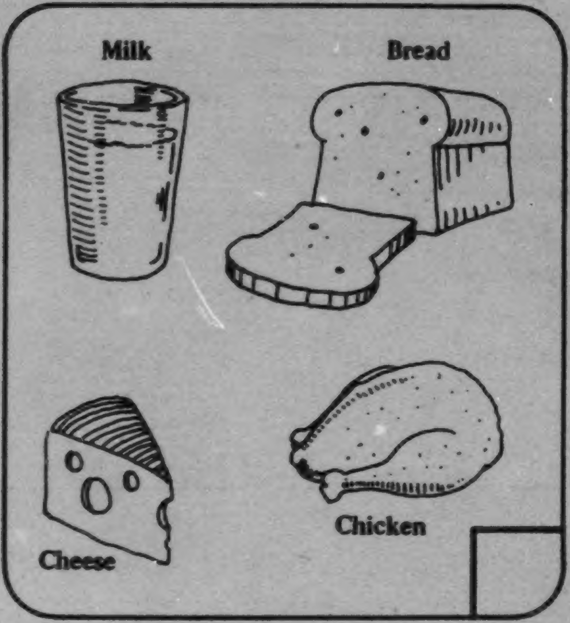
8. Which one of the food groups gives you the most calcium?

Milk Group. . . . . ☐ 09-1
Meat Group . . . . ☐ -2
Bread & Cereal Group . . . . ☐ -3
Fruit & Vegetable Group. . . . . . . ☐ -4

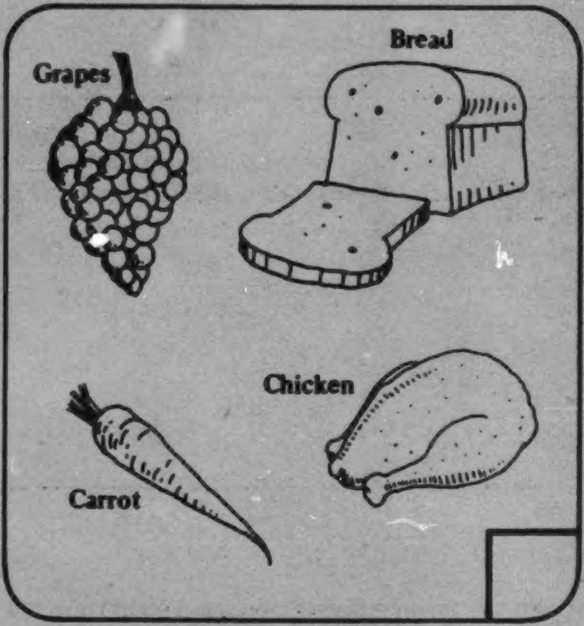
GO ON TO NEXT PAGE

9. Put an "X" in the box that shows all 4 food groups.

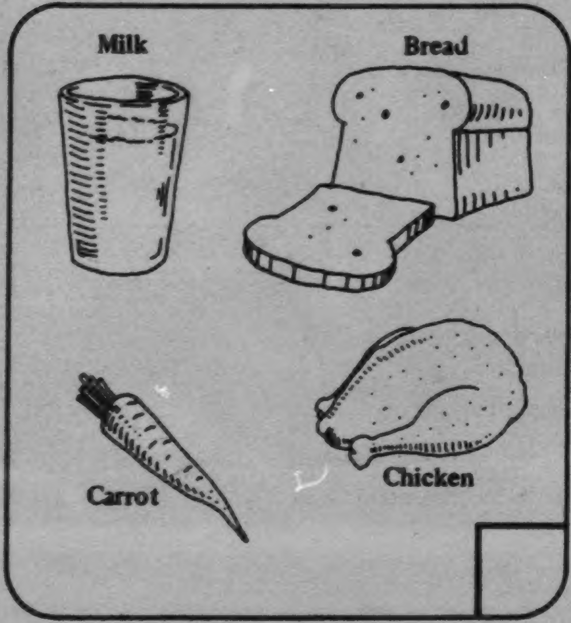
10 ____


Milk
Bread
Cheese
Chicken

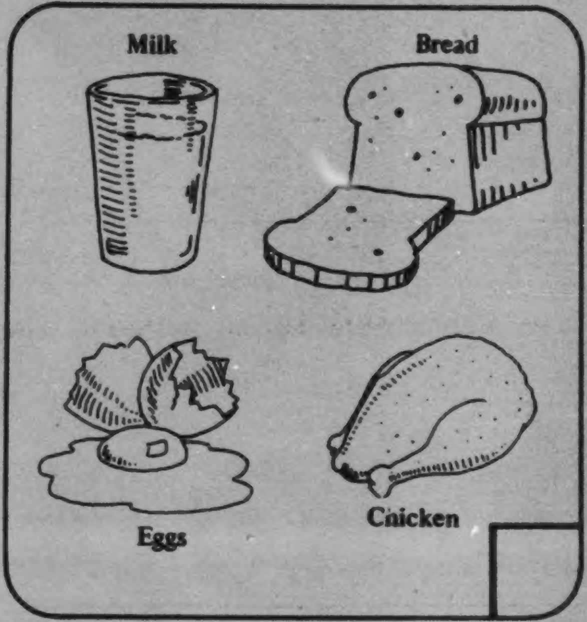
☐


Grapes
Bread
Carrot
Chicken

☐


Milk
Bread
Carrot
Chicken

☐


Milk
Bread
Eggs
Chicken

☐

GO ON TO NEXT PAGE

10. Which one of these foods is a good source of iron?

Milk ☐ 11-1
Liver ☐ -2
Orange Juice ☐ -3
Lettuce ☐ -4

11. Which one of these foods is the best source of Vitamin A?

Carrots ☐ 12-1
Grapes ☐ -2
Beets ☐ -3
Apples ☐ -4

12. Which of these foods provides mostly calories and little else?

Apples or pears ☐ 13-1
Peanut Butter ☐ -2
Ice Cream ☐ -3
Coke or soda pop ☐ -4

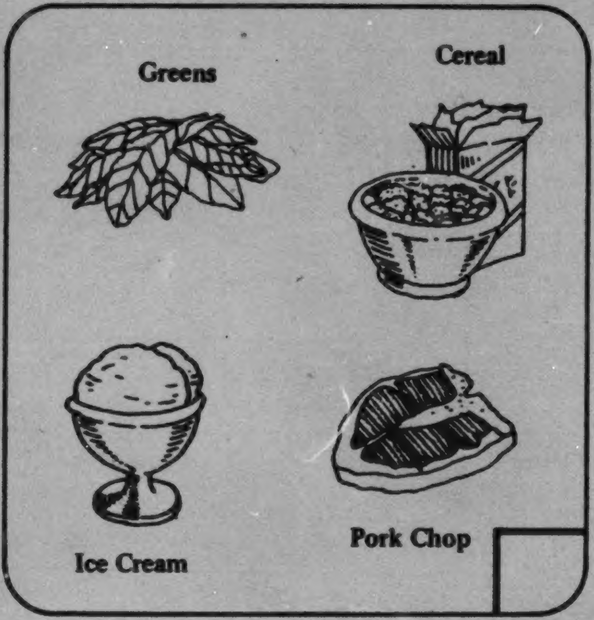
13. Which one of these nutrients helps build strong muscles and helps repair your body cells?

Fats ☐ 14-1
Carbohydrates ☐ -2
Protein ☐ -3
Calcium ☐ -4

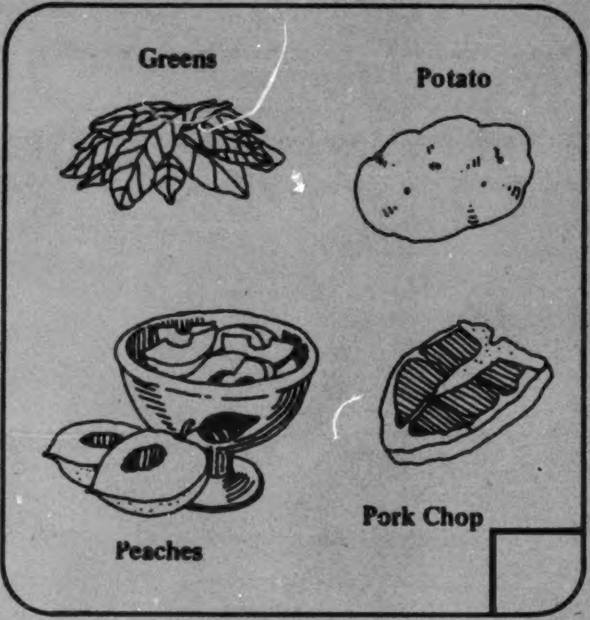
GO ON TO NEXT PAGE

14. Put an "X" in the box that shows all four food groups.

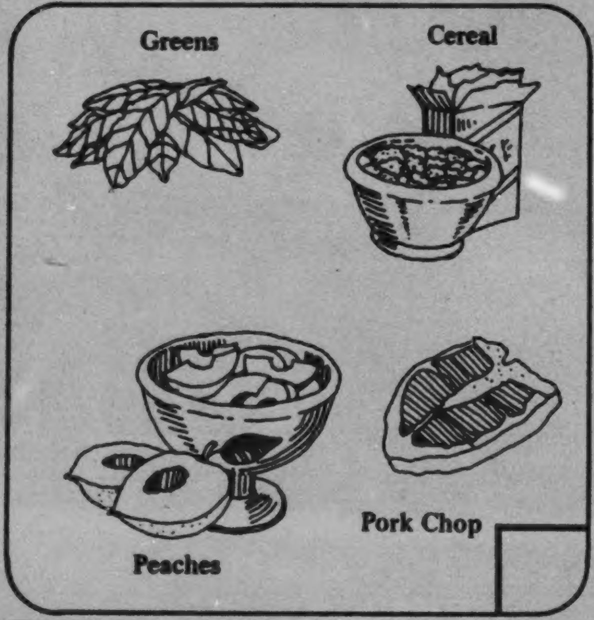
15 ____


Greens
Cereal
Ice Cream
Pork Chop

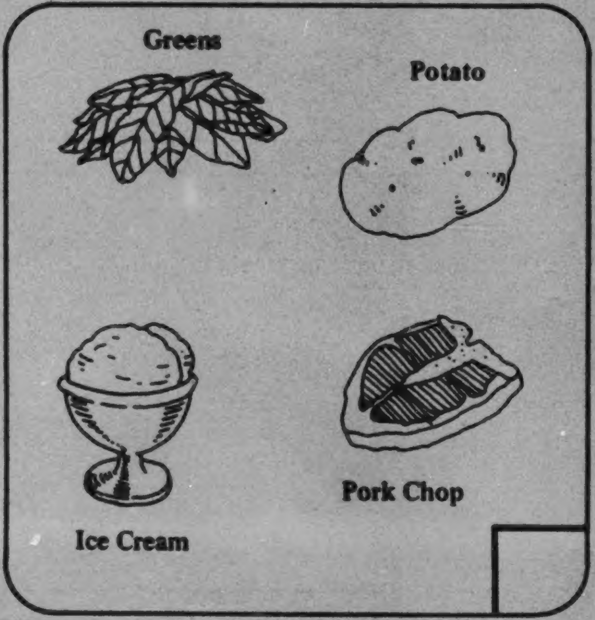
☐


Greens
Potato
Peaches
Pork Chop

☐


Greens
Cereal
Peaches
Pork Chop

☐


Greens
Potato
Ice Cream
Pork Chop

☐

GO ON TO NEXT PAGE

15. What does a balanced diet mean?

Balancing the fat, sugar, and protein so that each is the same . . . . ☐ 16-1
Eating just as much solid food as drink. . . . . ☐ -2
Balancing calories and nutrients from the four food groups . . . . ☐ -3
Counting up the calories in each and every food . . . . ☐ -4

---

16. What is the number of servings of food from the Meat Group you need each day?

1 serving each day . . . . ☐ 17-1
2 servings each day . . . . ☐ -2
3 servings each day . . . . ☐ -3
4 servings each day . . . . ☐ -4

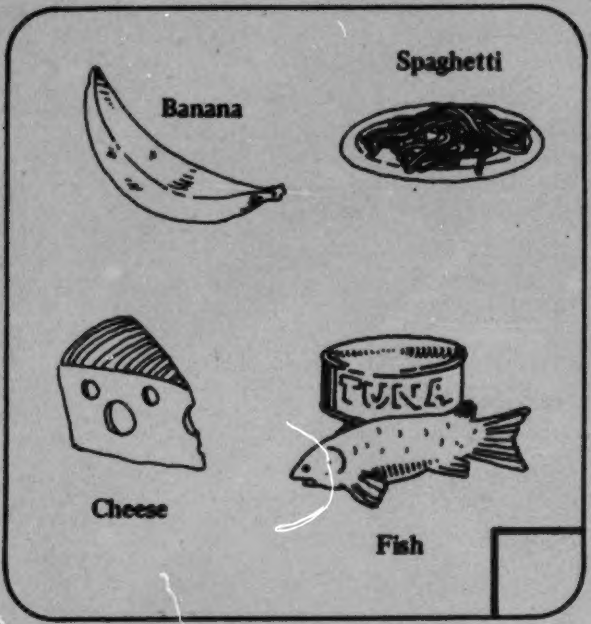
---

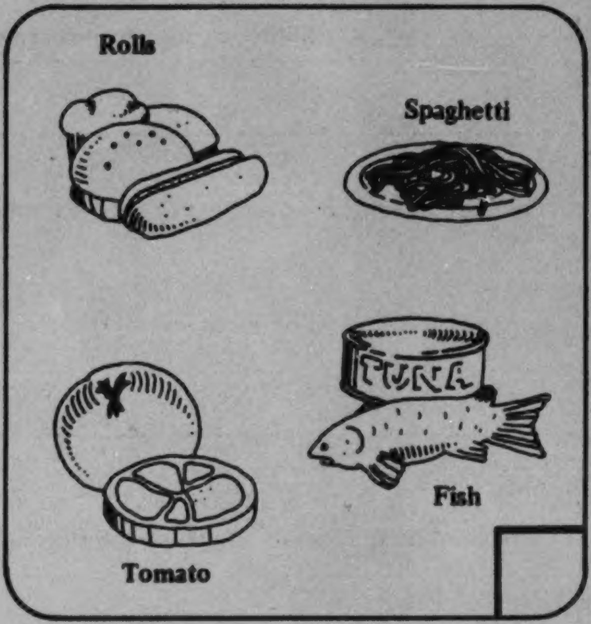
17. Which of these minerals do you need for healthy bones and teeth?

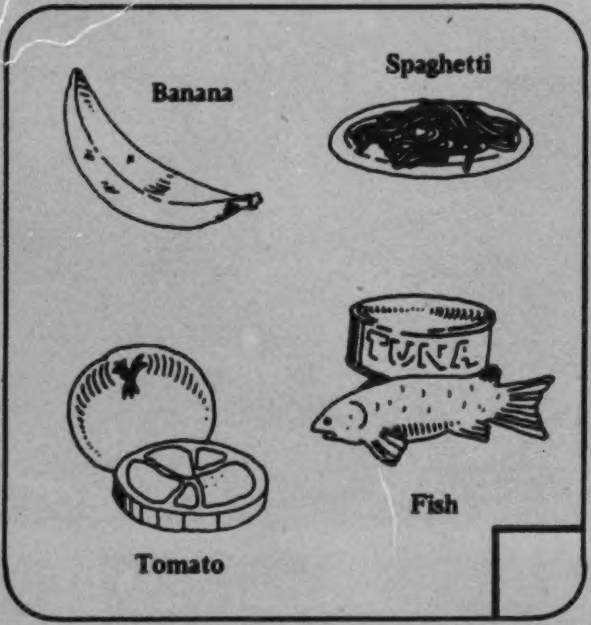
Iron. . . . . ☐ 18-1
Magnesium . . . . ☐ -2
Calcium. . . . . ☐ -3
Iodine. . . . . ☐ -4

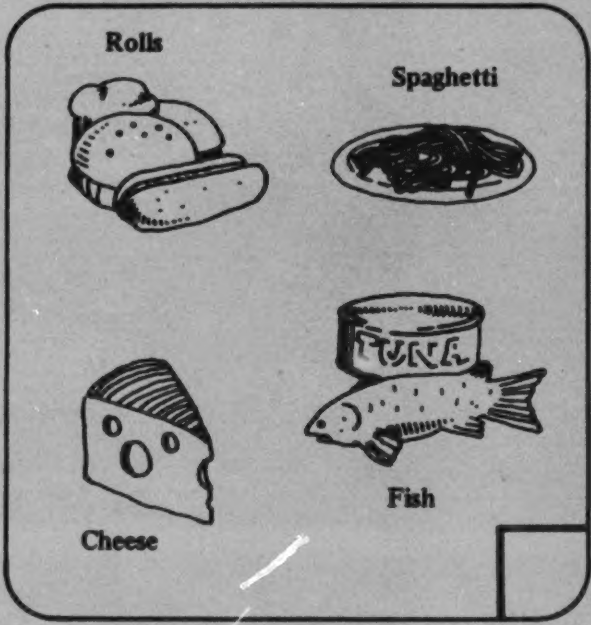
GO ON TO NEXT PAGE

18. Put an "X" in the box that shows all four food groups. 19 ____


Banana
Spaghetti
Cheese
TUNA
Fish


Rolls
Spaghetti
TUNA
Tomato
Fish


Banana
Spaghetti
Tomato
TUNA
Fish


Rolls
Spaghetti
Cheese
TUNA
Fish

GO ON TO NEXT PAGE

19. Which one of the following carries nutrients to your body cells?

Bloodstream . . . . ☐ 20-1
Throat . . . . ☐ -2
Liver . . . . ☐ -3
Saliva . . . . ☐ -4

---

20. What does the number of calories that you need depend on?

The size of your shoes . . . . ☐ 21-1
The color of your hair . . . . ☐ -2
How much you work and play . . . . ☐ -3
The number of meals you each each day . . . . ☐ -4

---

21. Where does your esophagus carry your food to?

Bloodstream . . . . ☐ 22-1
Tongue . . . . ☐ -2
Stomach . . . . ☐ -3
Mouth . . . . ☐ -4

GO ON TO NEXT PAGE

Here is what Dick and Eleanor had for breakfast this morning:

Dick's Breakfast	**Eleanor's Breakfast**
Apple juice	Grapefruit
Peanut butter on toast	Cheeseburger on a bun
Black coffee with sugar	

22a. Does Dick need anything extra to make his breakfast have servings from each of the four food groups?

Yes – A serving from the Milk Group. . . . . ☐ 23-1
Yes – A serving from the Meat Group . . . . ☐ -2
Yes – A serving from the Fruit and Vegetable Group . . . . ☐ -3
No – Already has servings from all four food groups . . . . ☐ -4

22b. Does Eleanor need anything extra to make her breakfast have servings from each of the four food groups?

Yes – A serving from the Milk Group. . . . . ☐ 24-1
Yes – A serving from the Meat Group . . . . ☐ -2
Yes – A serving from the Fruit and Vegetable Group. . . . . ☐ -3
No – Already has servings from all four food groups . . . . ☐ -4

25 ____
26 ____

PLEASE WAIT FOR YOUR TEACHER TO TELL YOU WHEN TO TURN THE PAGE

Part IV: ABOUT 'MULLIGAN STEW'

CD-2 CONT

1. "Mulligan Stew" is the name of a new TV series that may have been shown where you live. Have you seen any of the "Mulligan Stew" TV shows either at home or at school?

Yes ☐ 1 No ☐ 2 → Go right to Question 8

28R

2. Here are the names of each "Mulligan Stew" program. Put an "X" next to each show that you watched.

Program #1: "The Great Nutrition Turn On" was about a town called Lazy Susan . . . . ☐ 29-1

Program #2: "Look Inside Yourself" was about a brother and sister who didn't eat breakfast . . . . ☐ 30-1

Program #3: "The Flim Flam Man" was about a man who liked Fad diets . . . . . . ☐ 31-1

Program #4: "Getting It All Together" was about foods from different countries . . . . ☐ 32-1

Program #5: "Count-Down – 4-4-3-2 " was about Wilbur going on a camping trip . . . . ☐ 33-1

Program #6: "The Racer That Lost His Edge" was about a race car driver who was too fat to race . . . . ☐ 34-1

3. Put an "X" next to each thing that you liked a lot in the Mulligan Stew shows:

Mulligan Stew kids . . . . ☐ 35-1
Music and songs . . . . ☐ 36-1
Wilbur . . . . ☐ 37-1
Comedy . . . . ☐ 38-1
Puppets . . . . ☐ 39-1
Information on how to eat better . . . . ☐ 40-1
Adventures. . . . . ☐ 41-1
Didn't like anything . . . . ☐ 42-1

GO ON TO NEXT PAGE

4. Did your mother or father watch any of the "Mulligan Stew" shows?

Yes – Mother did ☐ 43-1 43___
Yes – Father did ☐ -2
No – Neither did ☐ -4
I don't know ☐ -5

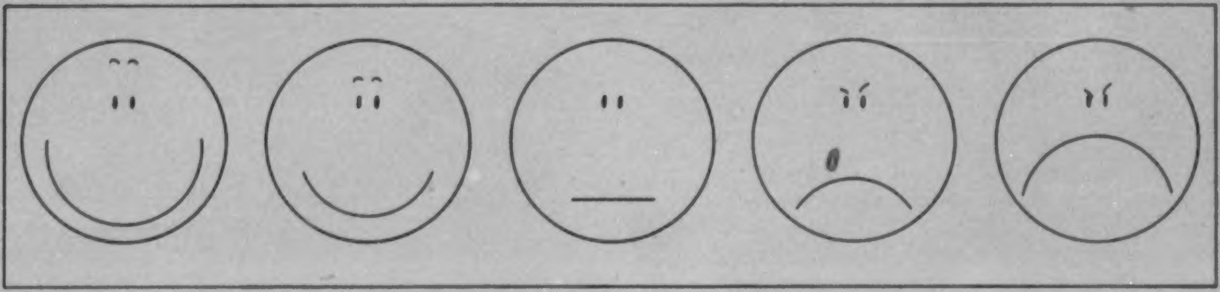
5. Did anyone else in your family watch any of the "Mulligan Stew" shows?

Yes ☐ 44-1
No ☐ -2
I don't know ☐ -3

6. Did you watch any of the "Mulligan Stew" shows on a *color TV?*

Yes ☐ 45-1
No ☐ -2

7. How much did you like watching the "Mulligan Stew" shows?
Put an "X" on the face that shows how you liked it.



46___

GO ON TO NEXT PAGE

8. Have you read or looked through the "Mulligan Stew" comic book?

Yes ☐ 47-1
No ☐ -2

Go the the bottom of the page

9. Have you played any of the games in the "Mulligan Stew" comio-book?

Yes ☐ 48-1
No ☐ -2

10. Have you fixed any foods from the recipes in the "Mulligan Stew" comic book?

Yes ☐ 49-1
No ☐ -2

50.____
51.____

PLEASE WAIT FOR YOUR TEACHER TO TELL YOU WHEN TO TURN THE PAGE

Part V: JUST A FEW MORE QUESTIONS

1. Have you ever heard of 4-H?

No ☐ 52-1 → Please go right to Question 5
Yes ☐ -2

---

2. Are you a member of 4-H?

Yes ☐ 53-1
No, but I would like to join 4-H ☐ -2
No, and I would not like to join 4-H ☐ -3

---

3. Put an "X" next to all the 4-H activities that you have taken part in:

4-H Mulligan Stew show . . . . ☐ 54-1
Other 4-H Television . . . . ☐ 55-1
4-H Club . . . . ☐ 56-1
4-H Special Interest Groups . . . . . ☐ 57-1
Other 4-H activities . . . . ☐ 58-1
I haven't taken part in any 4-H activities . . . . ☐ 59-1

---

4. Put an "X" next to all the 4-H activities that you would like to take part in:

4-H Mulligan Stew show . . . . ☐ 60-1
Other 4-H Television . . . . ☐ 61-1
4-H Club . . . . ☐ 62-1
4-H Special Interest Groups. . . . . . ☐ 63-1
Other 4-H activities . . . . ☐ 64-1
I wouldn't like to take part in any 4-H activities . . . . . . ☐ 65-1

---

5. Do you think you can learn a lot about food from other kids?

Yes ☐ 66-1
No ☐ -2
Don't know ☐ -3

GO ON TO NEXT PAGE

---

6. **In the last few weeks have you done any of the following?**

Put an "X" in the box next to *each* thing that you have done.

Fixed a meal or snack with a friend . . . . ☐ 67-1
Eaten a meal or snack with a friend . . . . ☐ 68-1
Shopped for food with a friend. . . . ☐ 69-1
Haven't done any of these . . . . . . ☐ 70-1

---

7. **Have you ever studied nutrition (that means what food does for you)?**

Yes ☐ 71-1
No ☐ -2

---

72 ____
73 ____

Thank you very much

Teacher Instruments. Teachers received two forms which were used to elicit information on activities, attitudes, and reactions related to Mulligan Stew. The first, Document B, is a Weekly Activities Log which the teachers in experimental classes maintained during the series. Teachers received instructions with the Weekly Activities Logs which requested them to list all class activities which they employed with each of the shows of the Mulligan Stew series. The second, Document C, the Teacher Record Form (TRF) elicits from teachers of participating classrooms background information on teacher activities/perceptions in regard to Mulligan Stew.

The TRF provides information on how the teachers rated the Mulligan Stew package. Of interest here is how the teachers themselves liked and used the programs and auxiliary materials.

One of the variables that could exert differential effects on student learning is the extent and type of teacher involvement in the program. This is best assessed by knowing what activities, if any, the teacher added to the films themselves, whether the teachers used any supplementary materials, and whether the students received any nutritional instruction prior to the TV series.

Since one of the results of the evaluation will be data to answer the following question: should Extension Service fund further TV series similar to Mulligan Stew?, the TRF includes a question asking teachers for their suggestions on possible future program areas.

The Weekly Record Log and the TRF follow below:

DOCUMENT B

WEEKLY ACTIVITIES LOG

MULLIGAN STEW

TEACHER'S NAME ______________________________ GRADE __________

SCHOOL ____

SHOW 1: "The Great Nutrition Turn On"

SHOW 2: "Look Inside Yourself"

SHOW 3: "The Flim Flam Man

SHOW 4: "Getting It All Together"

SHOW 5: "Count Down -- 4-4-3-2"

SHOW 6: "The Racer That Lost His Edge"

DOCUMENT C

Abt Associates Inc.
55 Wheeler Street
Cambridge, Mass. 02138

OMB No. 40-S74004

Approval Expires June, 1974

TEACHER RECORD FORM

for

"MULLIGAN STEW" SERIES EVALUATION

OMB No. 40-S74004
Approval Expires June, 1974

ABT ASSOCIATES INC.
55 WHEELER STREET, CAMBRIDGE, MASSACHUSETTS 02138
TELEPHONE • AREA 617-492-7100
TELEX: 710-320-6367

01	02	03	04	05	06	07

CD 3
08(3)

Dear Teacher:

We would greatly appreciate your filling out the attached Teacher Report Form. We are particularly interested in your opinions, both of the "Mulligan Stew" shows and any auxiliary materials you may have received.

In addition it is important for us to know if you yourself added any nutrition related activities to the viewing of the "Mulligan Stew" shows. The reason this information is valuable is to help us compare the impact of the "Mulligan Stew" series with or without additional learning activities.

In many of the questions which follow we ask you to rate different items.

The highest rating possible is 10; the lowest rating possible is 0. The scale looks like this:

Very Low					Moderate					Very High
0	1	2	3	4	5	6	7	8	9	10

Please circle the number that corresponds to your rating of each item.

Before you fill out the Teacher Report Form, please give us the information listed below.

Thank you very much for your help.

Cordially,

Sydelle Stone Shapiro

Sydelle Stone Shapiro, Ph.D.
Project Director

School ______________________

City ______________________

Grade (class) ______________________

CD 3
CONT

1. The first show of the "Mulligan Stew" series was THE GREAT NUTRITION TURN-ON.

This show was about a town called Lazy Susan.

Did you personally view this show? (PLEASE CHECK APPROPRIATE BOX BELOW)

09-1 ☐ No (PLEASE TURN THE PAGE)

-2 ☐ Yes
↓

How do you, as an educator, rate THE GREAT NUTRITION TURN-ON in each of the following areas?

(CIRCLE THE NUMBER THAT CORRESPONDS TO YOUR RATING OF EACH ITEM)

	Very Low ....Moderate....Very High											
a) As a nutrition-education resource in general	0	1	2	3	4	5	6	7	8	9	10	10/11__
b) The level of interest your pupils showed in this show	0	1	2	3	4	5	6	7	8	9	10	12/13___
c) How much this show helped develop interest in nutrition among your pupils	0	1	2	3	4	5	6	7	8	9	10	14/15____
d) How much this show helped create more positive attitudes toward good nutrition among your pupils	0	1	2	3	4	5	6	7	8	9	10	16/17___
e) How much this show helped develop better nutrition behavior among your pupils	0	1	2	3	4	5	6	7	8	9	10	18/19___

CD 3
CONT

2. The second show of the "Mulligan Stew" series was LOOK INSIDE YOURSELF.

This show was about a brother and sister who didn't eat breakfast.

Did you personally view this show? (PLEASE CHECK APPROPRIATE BOX BELOW)

20-1 ☐ **No** (PLEASE TURN THE PAGE)

-2 ☐ **Yes**

↓

How do you, as an educator, rate LOOK INSIDE YOURSELF in each of the following areas?

(CIRCLE THE NUMBER THAT CORRESPONDS TO YOUR RATING OF EACH ITEM)

		Very Low ....Moderate....Very High	
a)	**As a nutrition-education resource in general ....**	0 1 2 3 4 5 6 7 8 9 10	21/22__
b)	**The level of interest your pupils showed in this show ....**	0 1 2 3 4 5 6 7 8 9 10	23/24__
c)	**How much this show helped develop interest in nutrition among your pupils ....**	0 1 2 3 4 5 6 7 8 9 10	25/26___
d)	**How much this show helped create more positive attitudes toward good nutrition among your pupils ....**	0 1 2 3 4 5 6 7 8 9 10	27/28___
e)	**How much this show helped develop better nutrition behavior among your pupils ....**	0 1 2 3 4 5 6 7 8 9 10	29/30___

CD 3
CONT

3. The third show of the "Mulligan Stew" series was THE FLIM FLAM MAN.

This show was about a man who liked Fad diets.

Did you personally view this show? (PLEASE CHECK APPROPRIATE BOX BELOW)

31-1 ☐ No (PLEASE TURN THE PAGE)

-2 ☐ Yes

How do you, as an educator, rate THE FLIM FLAM MAN in each of the following areas?

(CIRCLE THE NUMBER THAT CORRESPONDS TO YOUR RATING OF EACH ITEM)

		Very Low			....Moderate....					Very High		
a)	As a nutrition-education resource in general	0	1	2	3	4	5	6	7	8	9	10	32/33___
b)	The level of interest your pupils showed in this show	0	1	2	3	4	5	6	7	8	9	10	34/35___
c)	How much this show helped develop interest in nutrition among your pupils	0	1	2	3	4	5	6	7	8	9	10	36/37___
d)	How much this show helped create more positive attitudes toward good nutrition among your pupils	0	1	2	3	4	5	6	7	8	9	10	38/39___
e)	How much this show helped develop better nutrition behavior among your pupils	0	1	2	3	4	5	6	7	8	9	10	40/41___

CD 3
CONT

4. The fourth show of the "Mulligan Stew" series was GETTING IT ALL TOGETHER.

This show was about foods from different countries.

Did you personally view this show? (PLEASE CHECK APPROPRIATE BOX BELOW)

42-1 ☐ **No** (PLEASE TURN THE PAGE)

-2 ☐ **Yes**

↓

How do you, as an educator, rate GETTING IT ALL TOGETHER in each of the following areas?

(CIRCLE THE NUMBER THAT CORRESPONDS TO YOUR RATING OF EACH ITEM)

		Very Low ....Moderate....Very High	
a)	As a nutrition-education resource in general	0 1 2 3 4 5 6 7 8 9 10	43/44___
b)	The level of interest your pupils showed in this show	0 1 2 3 4 5 6 7 8 9 10	45/46___
c)	How much this show helped develop interest in nutrition among your pupils	0 1 2 3 4 5 6 7 8 9 10	47/48___
d)	How much this show helped create more positive attitudes toward good nutrition among your pupils	0 1 2 3 4 5 6 7 8 9 10	49/50
e)	How much this show helped develop better nutrition behavior among your pupils	0 1 2 3 4 5 6 7 8 9 10	51/52___

CD 3
CONT

5. The fifth show of the "Mulligan Stew" series was COUNT-DOWN - 4-4-3-2.

This show was about Wilbur going on a camping trip.

Did you personally view this show? (PLEASE CHECK APPROPRIATE BOX BELOW)

53-1 ☐ No (PLEASE TURN THE PAGE)

-2 ☐ Yes

↓

How do you, as an educator, rate COUNT-DOWN - 4-4-3-2
in each of the following areas?

(CIRCLE THE NUMBER THAT CORRESPONDS TO YOUR RATING OF EACH ITEM)

	Very Low ....Moderate....Very High	
a) As a nutrition-education resource in general	0 1 2 3 4 5 6 7 8 9 10	54/55 ___
b) The level of interest your pupils showed in this show	0 1 2 3 4 5 6 7 8 9 10	56/57 ___
c) How much this show helped develop interest in nutrition among your pupils	0 1 2 3 4 5 6 7 8 9 10	58/59 ___
d) How much this show helped create more positive attitudes toward good nutrition among your pupils	0 1 2 3 4 5 6 7 8 9 10	60/61 ___
e) How much this show helped develop better nutrition behavior among your pupils	0 1 2 3 4 5 6 7 8 9 10	62/63 ___

CD 3
CONT

6. The sixth show of the "Mulligan Stew" series was THE RACER THAT LOST HIS EDGE.

This show was about a race car driver who was too fat to race.

Did you personally view this show? (PLEASE CHECK APPROPRIATE BOX BELOW)

64-1 ☐ **No** (PLEASE TURN THE PAGE)

-2 ☐ **Yes**

↓

How do you, as an educator, rate THE RACER THAT LOST HIS EDGE **in each of the following areas?**

(CIRCLE THE NUMBER THAT CORRESPONDS TO YOUR RATING OF EACH ITEM)

		Very Low ....Moderate....Very High	
a)	**As a nutrition-education resource in general ....**	0 1 2 3 4 5 6 7 8 9 10	65/66___
b)	**The level of interest your pupils showed in this show ....**	0 1 2 3 4 5 6 7 8 9 10	67/68___
c)	**How much this show helped develop interest in nutrition among your pupils ....**	0 1 2 3 4 5 6 7 8 9 10	69/70___
d)	**How much this show helped create more positive attitudes toward good nutrition among your pupils .....**	0 1 2 3 4 5 6 7 8 9 10	71/72___
e)	**How much this show helped develop better nutrition behavior among your pupils ....**	0 1 2 3 4 5 6 7 8 9 10	73/74___

CD 4
08(4)

7. Were you provided with a copy of the "Mulligan Stew" Guidebook for Teachers/Leaders/Aides? (We do not mean the orange covered Group Experimenter's manual but rather materials provided by Extension Service to some of you).

09-1 ☐ No (PLEASE TURN TO THE NEXT PAGE)
-2 ☐ Yes, but I did not use it
-3 ☐ Yes, and I used it

How do you, as an educator, rate the Guidebook for Teachers/Leaders/Aides in the following areas?

		Very Low					....Moderate....					Very High	
a)	As a nutrition-education resource in general	0	1	2	3	4	5	6	7	8	9	10	10/11___
b)	In providing useful games and puzzles	0	1	2	3	4	5	6	7	8	9	10	12/13___
c)	The usefulness of the "nutrition missions"...	0	1	2	3	4	5	6	7	8	9	10	14/15___
d)	The usefulness of the unit questions	0	1	2	3	4	5	6	7	8	9	10	16/17___
e)	The usefulness of discussion questions...	0	1	2	3	4	5	6	7	8	9	10	18/19___

Please describe how you utilized the Guidebook for Teachers/Leaders/Aides as a resource.

20___
21___
22___
23___
24___
25___

CD 4
CONT

8. Did your pupils receive and/or use the "Mulligan Stew" Comic/Workbook?

26-1 ☐ They did not receive it. (SKIP TO QUESTION 10)

-2 ☐ They received it

Did your pupils use the "Mulligan Stew" Comic/Workbook in any of the following ways? (CHECK ALL THAT APPLY)

27-1 ☐ Individually, in the classroom

28-1 ☐ In group activities, in the classroom

29-1 ☐ At home, by assignment

30-1 ☐ They were given the Comic/Workbook with no specific assignments

9. How do you, as an educator, rate the "Mulligan Stew" Comic/Workbook in each of the following areas? (CIRCLE THE APPROPRIATE NUMBER FOR EACH AREA)

		Very Low ....Moderate....Very High	
a)	As a nutrition-education resource in general	0 1 2 3 4 5 6 7 8 9 10	31/32___
b)	The level of interest your pupils showed in the comic/workbook..	0 1 2 3 4 5 6 7 8 9 10	33/34___
c)	How much the comic/workbook helped develop interest in nutrition among your pupils	0 1 2 3 4 5 6 7 8 9 10	35/36___
d)	How much the comic/workbook helped create more positive attitudes toward good nutrition among your pupils	0 1 2 3 4 5 6 7 8 9 10	37/38___
e)	How much the comic/workbook helped develop better nutrition behavior among your pupils..	0 1 2 3 4 5 6 7 8 9 10	39/40___

10. Did you yourself conduct any of the following activities related to the "Mulligan Stew" series?

(CHECK ALL THAT APPLY)

41-1 ☐ A. I did not conduct any activities related to the "Mulligan Stew" series with my pupils.

42-1 ☐ B. Class discussions before my pupils viewed a show.

43-1 ☐ C. Class discussions after my pupils viewed a show.

44-1 ☐ D. Classroom activities such as singing "Mulligan Stew" songs, making or displaying posters or menus, etc.

45-1 ☐ E. Assignments outside the classroom related to the "Mulligan Stew" series

CD 4
CONT

11. Considering the "Mulligan Stew" package as a whole, please tell us what you liked most, what you liked least, and any problem that you encountered.

THE TV SHOWS

a)

Liked Most

Liked Least

Problems encountered

46________
47________
48________
49________
50________
51________

THE GUIDEBOOK

b)

Liked Most

Liked Least

Problems encountered

52________
53________
54________
55________
56________
57________

THE COMIC BOOK

c)

Liked Most

Liked Least

Problems encountered

58________
59________
60________
61________
62________
63________

OTHER COMMENTS

d)

64________
65________
66________
67________
68________
69________

CD 5
08(5)

12. Prior to the time your pupils viewed the "Mulligan Stew" series, did they receive any instruction in the following areas?

	Yes	No
Food Groups	☐ 09-1	☐ -2
Nutrients	☐ 10-1	☐ -2
Food Preparation	☐ 11-1	☐ -2
Food Buying	☐ 12-1	☐ -2
Breakfast	☐ 13-1	☐ -2
Relation to health	☐ 14-1	☐ -2

Other: Specify ________________ 15________

________________ 16________

________________ 17________

CD 5
CONT

13a. National 4-H is considering future productions similar in nature to the "Mulligan Stew" series. They would very much like your opinion in terms of content areas you, as an educator, would find most useful and interesting.

Listed below are several content areas currently being considered for production.

Would you be interested in any of these being developed as a TV series for your use?

	Yes	No	Comments?
Health	☐ 18-1	☐ -2	
Ecology/ Environment	☐ 19-1	☐ -2	
Bicycle Safety	☐ 20-1	☐ -2	
Consumer Education	☐ 21-1	☐ -2	
Nutrition (a follow-up to "Mulligan Stew")	☐ 22-1	☐ -2	

23__________

24__________

CD 5
CONT

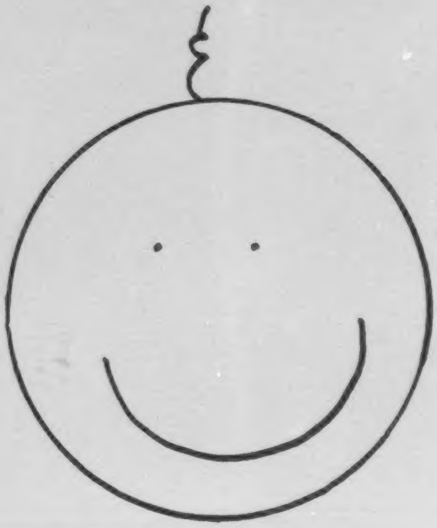
13b. Are there other content areas that should be considered? Please list below any you would particularly like to see.

25________

26________

27________

THANK YOU VERY MUCH FOR ALL YOUR HELP ON THIS STUDY!



Data Preparation

The major data handling efforts on this contract involved the processing of approximately 2800 students' pretest booklets and approximately 3100 post-test booklets. This section of the report describes the procedures followed in the processing of these forms from the time they were received at Abt Associates' Cambridge headquarters. Where appropriate, discussion of the Teacher's Record Form is also presented.

The main processing tasks performed on the contract were check-in, coding and editing, key punching and verification, computer cleaning and tape production. To ensure consistency, continuity, quality and inter-task coordination, a coding supervisor was assigned primary responsibilities for these tasks under the direction of the project director and deputy.

The Check-In Process

Controlling the receipt of materials from the field is an important aspect in maintaining the quality of a study like the national evaluation of "Mulligan Stew." By maintaining control of the check-in process, any booklets that might be missing could be quickly identified; it also served to verify that each school had returned all the materials on the study.

As the package from each school was received, the check-in control clerk opened the package and verified that all test booklets were returned by each participating teacher. The check-in process for the pretest also verified that all unused test booklets were returned, since we were concerned that these might possibly become a source of contamination of the post-testing phase had they remained in the hands of the teachers or school coordinators.

The identification numbers which had been assigned by the teachers to each student was checked against the "Teacher's Class Roster Record" to guarantee accuracy; other identifying information -- such as the School I.D. #, Site I.D. #, Grade, and Teacher I.D. # -- was entered onto the front page of each test booklet at the time of check-in. This check-in task was problem-free both for the pretest wave and post-test wave of the study. A copy of the Check-in Control Log follows:

Check-In Control Log

Mulligan STEW

Date Received_______________

Site_______________________ Pre-test__________

School_____________________ Post-test__________

ID#	Name of Teacher	# Surveys Sent to Teacher	# Complete Surveys Returned	# Blank Surveys Returned	# Surveys Missing	Manual Returned	Folder Returned	Batch # Assigned	# in Batc

Name of Coordinator	# Blank Surveys Sent	# Blank Surveys Returned	Total # Missing Surveys		
	5		School OK →		← This box blank until all forms accounted for

Comments:____

____

The Coding/Editing Process

In preparation for the coding and editing tasks which were to be performed for this contract, the coding supervisor conducted a series of training sessions with her staff. Coding and editing procedures were established, and the intent of each section of the test booklet was fully discussed with the coding staff so that they would have a better understanding of the goals of the contract.

To insure high quality throughout the coding and editing process, the coding supervisor and deputy project director checked the accuracy of at least 20% of each coder's work. All coders followed the procedures and coding conventions described in the Coding Manual.

While there were many detailed coding tasks to be completed by the staff, the major task of the coders involved the classification of the foods listed in Part I, Q. 4b ("Please tell us what you ate or drank for breakfast today."), and in Part II, Q. 1-4 (the grid of food items). For these items, coders tallied the number of servings listed for each of the four food groups (Bread & Cereal, Fruit & Vegetable, Milk, Meat), tallied the number of servings indicated from the "none" group; and finally tallied the total number of items selected by the student for each meal.

An additional coding task involved the "Name Your Own" box in the food grid for Part II. Foods which were written in this box were listed and given to Abt's nutrition consultant for classification into the various food groups; such items as taco, pancake syrup, Toast 'Em Pop Ups were listed so that they could be classified. The foods listed in the "Name Your Own" box will be found in the Coding Manual with their corresponding classification into the food groups (or the "none" group).

The main editing tasks performed by the coding staff in preparation for keypunching involved Part III of the test booklets; Part III questions measured the student's knowledge of nutrition. Since students had been instructed to check only one answer for each question in this part of the test booklet, coders reviewed each booklet to edit out multiple responses (code 8 was used to indicate that there was a multiple response to a particular question), and to write in the code for "no answer" (code 9) when a student left a particular question blank.

While staff production rates confirmed the tedious nature of the coding and editing operation, quality control checks on each coder's work indicated high quality performance.

The Key Punching and Verification Process

After the coding, editing, and other in-house quality control checks were completed, the test booklets were packaged and forwarded to Punch City Inc., a keypunching facility under subcontract to Abt Associates. The forms were keypunched onto IBM cards; all forms were 100% key verified to minimize keypunching errors. To ensure consistency and coordination of this task, a keypunch supervisor was assigned main responsibilities for this study, held discussions with Abt's coding supervisor, and was provided with a copy of the Coding Manual so that keypunch problems could be resolved without delay.

No problems were encountered during this phase of the processing.

The Computer Cleaning Process

The punched cards from the students' test booklets were run through a computer program designed to catch coding errors and keypunch errors. (It should be noted, however, that prior to running this program, initial tabulation of the data indicated that the error rate was well below 1%). The cleaning program checked each field of data for out-of-range values, checked the skip logic that had been indicated in the test booklets, and made several consistency checks between each student's pretest data and post-test data.

Additionally, the computer program identified students in the experimental groups that were missing a post-test, or were missing a pretest booklet; these records were dropped from the sample which was to be tabulated and analyzed. Furthermore, the computer identified students in either of the control groups who reported having seen any of the Mulligan Stew programs; these exposed control students were also dropped from the tabulations.

After the above tasks were completed, the data was ready to be fully tabulated.

Constraints and Limitations

Perhaps the most important feature of the Mulligan Stew impact evaluation and one that distinguishes it from previous educational research, is that it has been able to demonstrate positive effects of the program. Given the infrequency with which educational researchers have been able to document large positive effects for many recent education program, (e.g., the Coleman study and the evaluations of the Head Start compensatory educational program,[*] were unable to document sustained positive effects), the documentation of the success of a program like Mulligan Stew is an exceptional event in educational research, as was the case with "The Electric Company."[**] Before launching into an extensive description of the effects of the Mulligan Stew series, however, it is necessary to discuss the constraints and limitations which may have caused a reduction in the ability to evaluate the program accurately. One should consider the following discussion as a general framework for judging both the impact of the program and the accuracy of the evaluation.

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[*] Cicirelli, V., et al., The Impact of Head Start: An Evaluation of the Effects of Head Start on Children's Cognitive and Affective Development. Clearinghouse for Federal Scientific and Technical Information, U.S. Department of Commerce, National Bureau of Standards, Institute for Applied Technology. PB 184 328. June, 1969.

Coleman, J.S., et al., Equality of Educational Opportunity. U.S. Department of Health, Education and Welfare, 1966.

[**] Ball, S. and G.A. Bogatz, Reading with Television: An Evaluation of The Electric Company. Educational Testing Service, February, 1973.

The Greater Cincinnati Television Educational Foundation; Report of Television Multi-Channel System in Linciln Heights Elementary School, September, 1973.

There are at least two basic ingredients to an evaluation that can result in the finding of positive effects for an educational program. First, the program itself must have a real impact on the participants. If the program does not produce positive changes (cognitive, social, behavioral, attitudinal, etc.), no amount of design elegance or statistical legerdemain can elicit these non-existent effects. (One might have made the argument that limitations in the nature of the Mulligan Stew program militate against large, meaningful effects.) Secondly, the researcher must select a research design that is appropriate for the study. In a sense, one has to predetermine what effects are potentially measurable in order to develop an evaluative approach that can best get at these effects. An important corollary to this is that one cannot easily evaluate effects that have not been explicitly planned for in the design. (For example, one may wish to know if Mulligan Stew "works" for third graders. For various reasons, third graders were not included in the experimental design, so this question cannot be answered.)

One must also be able to implement the research design. Often elegant solutions to evaluation research questions are impossible to apply; the real world cannot be molded to fit perfectly into the cells of a particular experimental design table. In many cases, this "lack of fit" has seriously limited research efforts. The following sections describe some of the constraints that may or may not have been operating either because of something inherent in the nature of the series, or the approach taken in evaluating it, that would have reduced or masked the impact effects of Mulligan Stew.

Is there a "Real" Impact of Mulligan Stew?

Mulligan Stew is a series of six twenty-eight minute films, with accompanying work materials, on nutrition for children between the ages of 9 and 11. The question arises as to whether one can expect that this educational program will have a meaningful impact on the lives of the viewers. There are a number of reasons to suspect that Mulligan Stew might not produce appreciable effects.

- The Nutrition Message of the Films as a Limit

  The measurable impact of the films cannot exceed what is in the films themselves; i.e., one cannot expect subjects to know that beans and peanuts are sources of protein unless that information is presented in at least one film. The actual content of the films, therefore, functions as a limiting factor in impact. The analysis of the nutrition content of the films presented in this report suggests that the films in some specific instances may have confused the viewer by giving him nutrition information in a misleading way.

- The Pedagogic Quality of the Films as a Limit

  While a content analysis of the films may yield 20-50 bits of nutrition information, the manner in which nutrition is presented may enhance or reduce the likelihood of impact. Mnemonic devices, repetition, dual modality, presentation, and using the story line to carry the message are techniques that have proven successful in the past. From our student and teacher questionnaires we have learned, however, that some sixth graders considered the Mulligan Stew films too childish. For these students the effects of the films would be attenuated by boredom. In addition, although the films are made in color, many schools and homes have only black and white sets, so that the visual impact of the films would be reduced. The content analysis of the films indicate ways in which the intended message of the films may have been vitiated by mistakes in the production of the films and materials. These, too, would lead to a reduction in the impact of the series.

- The Novelty of Nutrition Information as a Limit

  In a sense, children are constantly being presented with nutrition information. By the time he is ten years old, the average American child will have had thousands of meals and snacks, will have visited supermarkets hundreds of times, and will have been given thousands of bits of nutrition information or misinformation from friends, television commercials, and box tops. Let us assume that the average child has received one thousand hours of "training" in nutrition from all the activities mentioned above. One can claim, therefore, that three hours of Mulligan Stew would produce only a marginal difference between experimental and control groups. Had the subject of the films been a more novel topic, such as nuclear energy, one might expect the three hour film treatment to produce larger effects.

Given the arguments that the effect of Mulligan Stew is limited by the amount of information presented in the films and auxiliary materials, by the pedagogic quality of the films, and by the overwhelming amount of nutrition-related information encountered by the child daily through other sources, it is necessary to examine the factors that might make Mulligan Stew a treatment that is powerful enough to produce positive results. In all the sites studied, Mulligan Stew was distributed directly through the schools or assigned by the teachers for home viewing. In many cases, the Mulligan Stew series was the first concentrated school-related instruction in nutrition for the children. To the extent that the films and materials surpassed minimal nutrition, information and pedagogic quality standards, it would be expected that some cognitive and attitudinal effects would result from Mulligan Stew. It is debatable, however, how large these real effects might be.

Was this Impact Effectively Assessed?

This report details the approach taken in developing a method to evaluate Mulligan Stew and includes copies of a teacher questionnaire, a student questionnaire, and the Extension interview guide for acquiring site level cost and organizational information. The following sections present some of the potential limitations in the field which might have influenced the results of the study.

- Site Selection Constraints

  The selection procedures for the study might have forced a selection of sites where a demonstrated lack of initiative and/or interest might militate against strong impact effects. To explain: the evaluation study was undertaken after Mulligan Stew has been available to all the State Extension Agencies for a year. A number of states had already featured the program both on local educational and/or public service TV. Since it was agreed that the sites selected for the impact study had to be limited to areas where it had not yet been shown, a reverse creaming effect was possible. That is, the early birds, those who used the show in the first season, were likely to be Extension personnel who were most enthusiastic about it and who were sufficiently aggressive to interest their states in it. One might argue that children at these sites would be more likely to show an impact effect than those sites that were staffed by less interested personnel.

- The Assignment of Classrooms to Treatment Conditions

The nature of the Mulligan Stew series made it impossible to assign children within classrooms to each of the four experimental and two control conditions at random. Children within a classroom or at home could not be forced to not view Mulligan Stew when their neighbors or classmates were viewing it. Therefore, whole classrooms were assigned intact to the design conditions. The analysis, however, used the aggregate of all children viewing Mulligan Stew under a specified set of conditions as the unit of analysis since it was the aim of the analysis to measure the relative effectiveness of various types of viewing conditions. This is a legitimate procedure, if the classrooms are assigned randomly to treatment conditions. Since classrooms are relatively homogeneous, however, in terms of racial and SES composition, the misassignment of just one classroom could result in 20-30 relatively similar children being misassigned, with the result that certain characteristics of the children would be hopelessly confounded with the treatment effects.

As Table 6b below shows, this misassignment did not appear to occur in this study. Correlations were run between condition and possible confounding variables such as reading level, family income, grade level, and pretest scores on the nutrition knowledge test, to check the effect of possible confounding. These correlations were virtually zero.

As originally planned, each of the six sites would include all 18 experimental and control classes. That is, there would be a total of 108 classes over six sites, and each site would have equal representation for each experimental condition. Such a design would be very powerful, since it would reduce the possibility of an impact effect being idiosyncratic to the site, i.e., confounding of site effects and experimental conditions. Field realities precluded crossing all sites with all viewing conditions. To the extent that the original design was not met, the rigor of the experiment is reduced.

TABLE 6a

DEMOGRAPHIC CHARACTERISTICS OF EXPERIMENTALS AND CONTROLS IN EACH GRADE

	FOURTH GRADERS		FIFTH GRADERS		SIXTH GRADERS	
	Experimentals	Pre/Post Controls	Experimentals	Pre/Post Controls	Experimentals	Pre/Post Controls
(BASE: Sample Size = 100%)	(583)	(112)	(631)	(123)	(609)	(140)
SEX						
Male	49%	52%	52%	50%	52%	53%
Female	15%	48	48	50	48	47
AGE						
9 years or younger	38%	41%	*%	1%	-	-
10	53	47	37	30	*%	-
11	7	9	48	56	35	34%
12	2	-	10	11	52	57
13 years or older	-	3	4	2	11	9
Not reported	-	-	1	-	1	-
READING LEVEL						
Below grade level	26%	29%	32%	29%	30%	45%
At or above grade level	72	71	64	44	60	51
Not reported	2	-	4	27	10	1
ESTIMATED ANNUAL FAMILY INCOME						
Under $5,000 per yr.	29%	20%	27%	21%	28%	31%
$5,000-$10,000 per yr.	36	55	34	41	30	50
Over $10,000 per yr.	35	25	34	11	30	19
Not reported	-	-	5	27	12	-
ETHNIC/RACIAL						
White	67%	69%	63%	51%	55%	61%
Black	9	16	9	3	6	16
Spanish Surname	23	15	23	18	24	21
All Others	1	-	1	4	1	2
Not Reported	-	-	4	27	14	-

* Less than 0.5%

The Use of a Written Questionnaire

Because of budget constraints, it was decided to gather student information through a written questionnaire administered to entire classrooms by the teachers. If a student could not read the questionnaire, he probably would not understand it even with the teacher's help. Therefore, part of the "true" effect of *Mulligan Stew* might be reduced because of the inability of certain poor readers to display this effect in a written questionnaire. In this study reading level was found to be unrelated to treatment condition. And, although reading level is highly correlated with pretest and post-test scores on the nutrition knowledge test, it is only *minimally* related to gain scores on the test.

A somewhat more serious problem involving using a written questionnaire is that it may be an inappropriate method to collect certain information on the effects of *Mulligan Stew*. Ideally one does not measure changes in nutrition behavior or attitudes with a paper and pencil test. Rather, one ought to observe the children in the school cafeteria in order to determine if they are eating more balanced diets, or weigh the children, or accompany them on visits to food stores. Of course, manpower was not available to conduct such a complex, difficult observational study; less accurate methods, such as food selection tables had to be relied on for measuring nutrition "behaviors" and "attitudes." In certain instances, the positive gains reported in this study are only imperfectly related to the "real" effects of *Mulligan Stew*.

The Timing of Questionnaire Administration

The student questionnaires were administered just before the children begin to watch the series, and six weeks later, just after the six films were watched. In selecting this time frame, the possibility of detecting changes in nutrition knowledge was maximized. However, if one assumes that nutrition behavior and attitudes are less amenable to immediate manipulation, the short time difference between pretest and post-test would tend to dampen the perceived effects of the series on these two outcome measures. A longer time between the two test administrations might have allowed perceived changes in nutrition behavior and attitudes to emerge more dramatically.

- Base Levels of Knowledge and/or Nutrition Related Behavior

  The base level of knowledge and/or nutrition related behavior had of necessity to be low enough so that learning could take place. If the children had received much nutrition training before Mulligan Stew, they would probably score high on the information section of the pre-test. The potential for change would be sharply reduced.

  Also, nutrition behavior measurement is problematical. Since it is conceded that many people exceed the recommended daily allowances as defined by the Department of Agriculture, it was to be expected that as a group the children would already be at or above their 4-4-3-2 requirements, as evidenced by food selections in the pretest. Thus there could be no room for improvement. What was of interest was the question of whether fewer "junk" foods would be selected. In both nutrition knowledge and nutrition behavior, however, the children on the whole did not reach "ceiling" levels on the pretest or post-test, although there may be ceiling effects for certain subjects.

- The Timing and Scheduling of the Programs

  It was decided that the timing and scheduling of the programs should be as close as possible to the most likely schedule in a non-experimental situation. That is, if programs were usually scheduled once a week, the study should replicate this. The study is not designed to investigate the optimal time interval between programs, but the impact of the programs in the free field (a "natural" experiment).

Analytic Procedures

The analysis was focused on answering a series of questions. These questions flowed from the major hypotheses around which the study was formulated; i.e., children who view the series will exhibit positive changes in knowledge about nutrition and changes in nutrition-related behaviors. These changes will be differentially affected by viewing condition (in school, at home); use of auxiliary materials (comic book, no comic book); grade level (4th, 5th, 6th). Also, children who view the series will show an increased awareness of and interest in 4-H.

The pupil impact evaluation sought to assess the impact of Mulligan Stew on children who viewed the series in the following realm:

- Nutrition knowledge -- does viewing Mulligan Stew increase viewing children's store of facts about nutrition?
- Nutrition-related behaviors -- does viewing Mulligan Stew increase the number of positive behaviors related to nutrition in which viewing children engaged?
- Food intake intentions -- given a wide array of foods from which to choose for breakfast, lunch, dinner and a snack, what kind of diets will children choose before and after viewing the Mulligan Stew series?
- Breakfast-eating behavior -- after viewing the series will more children eat breakfast than did prior to exposure?
- Attitudes toward learning about food from other children -- will more children feel that they can learn about food and nutrition from their peers after they have seen Mulligan Stew than before viewing the series?
- Finally, does viewing Mulligan Stew cause heightened awareness of 4-H among children?

Among children who view Mulligan Stew are there differential effects attributable to -

- experimental conditions
- reading level
- income level
- prior nutrition education
- # programs watched
- teacher involvement

In order to assess teacher involvement and also to elicit information on teacher responses to the series, analyses of responses to the teacher record form (TRF) addressed the following questions:

- What rating did the teachers give to the series and the guidebooks?
- How active were the teachers in terms of using the comic book and conducting activities related to *Mulligan Stew*?
- Do teachers watch the shows?
- What suggestions do teachers have regarding *Mulligan Stew* or other TV shows?

The analyses which follow detail the procedures employed.

Indices of Impact: Operational Indicators

The pupil test booklets and the Teachers' Weekly Activities Log and Teacher Record Form generated a tremendous amount of data for potential use in the pupil impact evluation -- an amount so large that any attempt to either analyze or present it bit-by-bit would be both redundant and confusing. We have, therefore, identified six major areas of impact, and wherever possible we have constructed operational indicators of these impact areas by combining several items in the questionnaire.

To provide a fair assessment of *Mulligan Stew* in any of the areas of impact described above it is necessary to take cognizance of the fact that children were not starting from some zero point, nor do they all start at the same level in a given impact area. Further, we needed to take into consideration the point that we were assessing not only the impact of *Mulligan Stew* in general in these areas, but we also wished to find out if some viewing conditions were more effective than others. Therefore, each of the seven operational indicators we have used to assess the impact of *Mulligan Stew* in the realms described above were constructed using the same set of logical operations. Generically, they were as follows:

(1) The unit of analysis is the aggregate of all children viewing the *Mulligan Stew* series under a specified set of conditions. These viewing conditions are specified by the research design as described in the design section, and were analyzed separately by grade level. The viewing conditions within each grade level are:

- All viewing children
- All children who viewed in school
- All children who viewed at home
- All children who received the comic/work book
- All children who did not receive the comic/work book
- All children who viewed in school *and* received the comic/work book
- All children who viewed in school but *did not receive* the comic/work book
- All children who viewed at home *and* received the comic/work book
- All children who viewed at home but *did not receive* the comic/work book
- All control group children (those who neither viewed the series nor received the comic/work book).

(2) Before comparing each experimental group with its corresponding grade level control group in terms of each operational indicator or outcome measure, it is necessary to adjust for, or take account of, the starting point of the children in each group. The actual operations conducted to achieve this vary somewhat among outcome measures and are presented below as we describe each outcome measure. The indices are constructed so that higher scores represent more desirable outcomes.

- *Nutrition Knowledge*. The operational indicator for this impact area is based on Part III of the test booklet, which consists of 23 nutrition knowledge questions. The indicaor may be described as the increase in correct responses from pretest to post-test as a percentage of the number of correct responses on the pretest (for each viewing condition). The computational algorithm used to construct this indicator was (for each viewing condition within each grade level):

$$\frac{\text{(Mean \# correct on post-test) - (mean \# correct on pretest)}}{\text{(mean \# correct on pretest)}}$$

The denominator of this algorithm -- the mean number of correct responses on the pretest -- defines the "starting level" for any specified group and is, in effect, the base for the percentage; the numerator defines the actual change in the mean number correct between the pretest and post-test. By dividing, we obtain the percent gain in correct responses from the starting or pretest level by the group of children who viewed (or didn't view, in the case of the control group) under a specified set of conditions.

- Nutrition-related Behaviors. The operational indicator for this impact area is based on the responses to seven items in the test booklet that ask if the child had recently engaged in the behaviors. The number of positive responses to these seven items were summed, forming a nutrition-related behavior index with a range of 0-7. The behaviors constituting this index are:

  - In the past weeks, have you tried any foods that you have never eaten before? (Item I-5)
  - Have you fixed any meals for yourself (like fixing your own breakfast) in the last week? (Item I-6)
  - Have you helped fix any family meals in your home in the last week? (Item I-7)
  - Have you helped with any grocery shopping for your family in the last week? (Item I-8)
  - In the last few weeks have you done any of the following?
    - Fixed a meal or snack with a friend?
    - Eaten a meal or snack with a friend?
    - Shopped for food with a friend? (Item V-6)

The outcome measure for this impact area, based on this index, may be described as the increase in number of nutrition-related behaviors from pretest to post-test as a percentage of the number on the pretest. The computational algorithm, identical in form to the nutrition knowledge algorighm, is:

$$\frac{\text{(mean \# behaviors on post-test) - (mean \# behaviors on pretest)}}{\text{(mean \# behaviors on pretest)}}$$

and is interpreted in the same way as the nutrition knowledge outcome measure.

- Food Intake Intentions. Two operational indicators of impact in this area were constructed, one related to the 4-4-3-2 formula for a balanced diet, and the second related to the selection of "junk" foods. (Throughout this report we shall refer to food items having little (or no) nutritive value -- for example, snack chips and soda pop -- as "junk" foods.) Both are based on the menu selection section of the text booklet, Part II.

The 4-4-3-2 operational indicator is the percent of children, who on the pretest were deficient in their choices in one or more of the food groups for the entire day's food intake, but whose choices on the post-test equalled or exceeded the 4-4-3-2 formula. The computational algorithm within each condition is:

$$\frac{\text{\# of children equalling or exceeding 4-4-3-2 on post-test but who were deficient on the pretest}}{\text{\# of children who were deficient on 4-4-3-2 on pretest}}$$

The "junk" foods operational indicator is described as the percent of the reduction in the mean ratio of "junk" foods to nutrition foods from pretest to post-test. Computationally this outcome measure is defined for a specified group by the algorithm:

$$\left(\frac{\left(\frac{\text{\# "junk" foods selected on post-test}}{\text{\# nutritious foods selected on post-test}} \right) - \left(\frac{\text{\# "junk" foods selected on pretest}}{\text{\# nutritious foods selected on pretest}} \right)}{\left(\frac{\text{\# "junk" foods selected on pretest}}{\text{\# nutritious foods selected on pretest}} \right)} \right)$$

The minus sign outside the parentheses simply gives us a positive number if a reduction in the ratio of "junk" to nutritious foods selected occurs.

A numerical example may help clarify the interpretation of this algorithm. In Part II of the pupil questionnaire there are 4 grids of food pictures. Each grid is identical and contains pictures of 41 foods -- 11 "junk" foods and 30 nutritious foods.

In order to determine the pupil's total food preferences for the entire day, selections from all four grids were summed. Thus, a child's food selection preference for the day can be a maximum of 44 "junk" food items and 120 nutritious foods.

As an example of the computing algorithm suppose that the experimental group choose an average of 8 "junk" foods and 14 nutritious foods on the pretest and 7 "junk" foods and 13 nutritious foods on the post-test. The computing algorithm would look like this:

$$\text{\% Reduction} = -\left(\frac{\frac{7}{13}-\frac{8}{14}}{\frac{8}{14}}\right) = -\left(\frac{.53-.57}{.57}\right) = -\left(\frac{-.04}{.57}\right) = 7\%$$

- Breakfast Eating Behavior. The operational indicator for this impact area is based on the children's responses to question I-4a in the test booklet; "Did you eat breakfast this morning?" The outcome measure is defined as the percent of those children who indicated they had not eaten breakfast on the pretest, but did eat breakfast on post-test. The outcome measure is computed as:

$$\frac{\text{(\# of children who ate breakfast at post-test, but did not eat breakfast at pretest)}}{\text{(\# of children who did not eat breakfast at pretest)}}$$

- Attitudes toward Learning about Food from Peers. The operational indicator of this impact area is based on question V-5 which simply asks the child if he feels he can learn about food from his friends. The outcome measure is defined as the percent of those children who, while indicating "No" on the pretest, said "Yes" on the post-test, and is computed by:

$$\frac{\text{(\# of children answering "Yes" on post-test, but "No" on pretest)}}{\text{(\# of children answering "No" on pretest)}}$$

- Awareness of 4-H. The operational indicator of this impact area is the percent of the children who indicated they had heard of 4-H on the post-test, but had not heard of it on the pretest. Computationally, for each condition:

$$\frac{\text{(\# of children who had heard of 4-H on the post-test, but not on the pretest)}}{\text{(\# of children who had not heard of 4-H on the pretest)}}$$

During the remainder of this section we shall refer to these seven outcome measures using the following abbreviations:

(1) % increase in nutrition knowledge
(2) % increase in nutrition-related behaviors
(3) % change in preference for adequate diets
(4) % reduction in preference ratio for "junk" foods
(5) % change to eating breakfast
(6) % change to learning from peers
(7) % change to awareness of 4-H

In addition to the seven indices constructed from the student instrument, we constructed two scales of teacher involvement from the teacher record form. Since the teachers were asked to rate each film and the auxiliary materials along a large number of dimensions, we were faced with an overload of data from which to select the most important indices. We decided to include the teacher responses as a separate section and to use only two measures of teacher involvement to predict child outcome measures.

- Number of Shows Watched. We assumed that teachers who saw more of the Mulligan Stew shows would be more able to help their students understand the nutrition information presented in the series. This scale was found by summing the number of "Yes" answers to Questions 1, 2, 3, 4, 5, and 6[*] which ask the teacher if he had viewed a particular Mulligan Stew show. This scale ranges from 0 to 6.

- Number of High Involvement Activities. This scale was developed by adding up the number of activities listed by the teachers in their weekly activities logs which appeared to us to entail a high degree of teacher involvement. This scale necessitated a rather arbitrary definition of what makes up a high involvement activity; we defined such an activity as any action taken by the teacher related to nutrition using techniques or materials not normally employed by the teacher in day-to-day teaching. For example, the response, "We discussed the second film" would not indicate high involvement while the response, "We made No-Bake Cookies and visited a dairy farm" sould produce a high involvement score of 2 for that day. This scale ranges from 0 to 7.

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[*] Questions from Teacher Record Form (TRF)

Other Analyses

One may ask the question, even before we turn to the presentation of the results, "What assurances are there that the effects demonstrated are not due to factors other than exposure to the Mulligan Stew series?" This is a valid question, and one that was addressed before conducting the analysis, the results of which are presented in the "Major Findings" section below.

The first answer to the critical query suggested above is that the research design, using controls and experimentals and random assignment to experimental conditions by definitions should eliminate alternative explanations of the results. We were not, however, able to implement the ideal research design to the letter, either in terms of completely random assignment or in terms of representing all experimental conditions within each site. Therefore, a series of regression and discriminant analyses were conducted to determine if several factors other than exposure to the series could explain increases in the outcome measures. The factors that were examined as "competing explainers" of results were:

- reading level
- family income
- sex
- age
- number of shows watched by teacher
- number of high involvement activities engaged in by the teacher
- number of shows watched by the children.

Reading level explains nothing beyond grade level (which is part of the research design) in the outcome measures. The only one of the other variables that has an impact on the outcome measures is the number of shows in the series that were viewed. This, however, is much more of an indicator of the effect of exposure to the series rather than a competing explanation of results.

It will be noted that the "Major Findings" section does not report findings on the Post Only Control group described earlier, since the focus of our analysis was based upon changes that occurred since the pretest. This post only control group has been compared to our pre/post control group; the post levels for both control groups are at about the same level indicating no serious sensitization of the controls from the measurement process.

Complete documentation of all computer runs performed for the analyses may be found in Volume IV, Documentation.

- **Tests of Statistical Significance**

Let us for the moment suppose that we repeated this study a half dozen times, each time drawing an entirely new sample of youth. Because we're dealing with samples, each repetition of the experiment would generate data that demonstrated that our sample data contains a certain amount of sampling error. This is chance variation that is found in all data gathered from samples of individuals (rather than from the entire population).

It thus becomes reasonable to ask if the differences observed among our various treatment groups -- for example, the differences between those youth who viewed in school with the comic book and those youth who were the (unexposed) controls -- are due merely to random fluctuations in the sample data. Various statistical techniques (called tests of statistical significance) have been devised which tell us the likelihood that our various treatment groups might have differed as much as they do by chance -- even if there were really no differences between them.

We arbitrarily set a very stringent guideline for making the statement that exposure to Mulligan Stew had an effect on an outcome measure (i.e., that gains made by the experimental group are really greater than those made by the control group). This guideline is that the test of statistical significance has to show that we would be correct in stating a positive effect at least 99% of the time. That is, a statement that exposure to Mulligan Stew had a positive effect has a probability of less than $p \leq .01$ of being wrong.

In the tables presented in the "Major Findings" section that follows the test of significance for a difference between proporitions (percents) was used. This test, which involves employing an arcsin transformation of proportions, in order to normalize the distribution, is described in J. Cohen's Statistical Power Analysis for the Behavioral Sciences (New York: Academic Press, 1969), on pages 174-206.

In each of Tables 7-13, an asterisk (*) appears at the base of each bar for any of the experimental conditions that were found to be (statistically) significantly different from its grade level control group.

The following section discusses the study results in this descriptive manner. The tables accompanying the discussion present results for each grade, each experimental condition, and combinations of experimental conditions for each outcome measure using bar graphs.

Major Findings

Introduction

In this section we shall examine the impact of viewing the Mulligan Stew series, under several different conditions, upon each of the seven outcome measures described in the preceding section:

(1) % increase in nutrition knowledge

(2) % increase in nutrition-related behaviors

(3) % change in preference for adequate diets

(4) % reduction in preference ratio for "junk" foods (i.e., "empty calorie" foods)

(5) % change to eating breakfast

(6) % change to learning from peers

(7) % change to awareness of 4-H.

Tables 7-13 depict the program effects on these outcomes. Each table addresses one of the outcome measures and is formatted to facilitate making comparisons of program impact on a single outcome measure among grade levels and among the various experimental viewing conditions. All tables are formatted in the same way to aid in making comparisons of program impact among the various outcome measures. Tables 41-46 in Appendix B present the experimental condition group means that were used in computing the percents in Tables 7-13.

In each table the experimental viewing condition is described on the left side of the page. The bars represent the percent increase in the outcome measure, pretest-to-post-test, for each set of viewing conditions, with a black bar representing 4th grade, a spotted bar representing 5th grade, and a lined bar representing 6th grade. Each table first depicts what happened to the control groups, which provides a basis against which to compare the effects on the various experimental groups. Next are presented the results for all viewing (experimental) children, by grade level. This provides us with a gross description of the impact of viewing Mulligan Stew in general, disregarding the differential impacts of viewing the series under various sets of conditions. The remaining sets of bars in the tables then proceed to decompose the gross effects of viewing the series in general into the differential impacts observed under succeedingly more specific sets of viewing conditions.

We shall now turn to a presentation of the impacts of viewing Mulligan Stew on each of the outcome measures listed above. We shall ask four questions about each outcome measure:

> Question 1: In general, does viewing Mulligan Stew result in a positive effect on (Outcome measure)?
>
> Question 2: Do children who view Mulligan Stew in school show a percent increase in (outcome measure) that is different from the increase shown by the children who view it at home, disregarding whether or not the children use the comic/workbook?
>
> Question 3: Do children who use the comic/workbook show a percent increase in (outcome measure) from the increase shown by children who do not use it, disregarding whether or not the children view the series in school or at home?
>
> Question 4: Do the various combinations of viewing conditions (in-school/with comic, in-school/without comic, at home/with comic, at-home/without comic) have differential impacts on (outcome measure)?

If the answer to Question 1 is "No" we will not pursue Questions 2-4.

Impact on Nutrition Knowledge

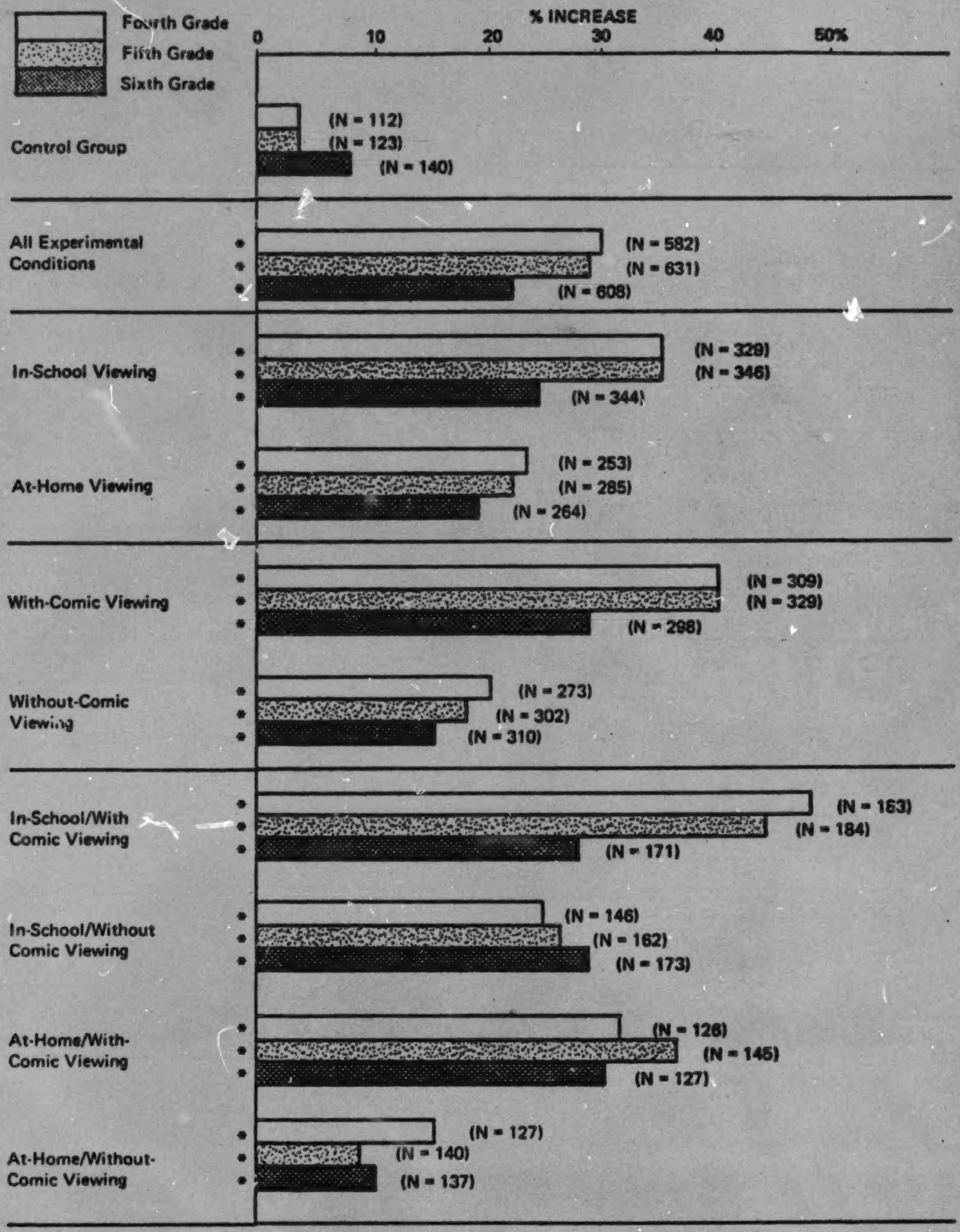
Table 7 depicts the impact of viewing the Mulligan Stew series on percent increase in nutrition knowledge.

> Question 1: In general, does viewing Mulligan Stew result in an increase in nutrition knowledge?

Looking at the experimental group as a whole it is readily apparent that in general viewing the series has a pronounced impact on percent increase in nutrition knowledge. Fourth graders demonstrated a 30% increase, 27% more than their control group counterparts who showed a 3% increase. Fifth graders gained 29%, 26% more than their controls and 6th graders gained 14% more than their controls. All of these are quite large effects.

TABLE 7

PERCENT INCREASE IN MEAN NUMBER CORRECT ON NUTRITION KNOWLEDGE TEST, PRETEST TO POST-TEST, BY VARIOUS EXPERIMENTAL CONDITIONS



- In general, viewing the Mulligan Stew series has a strong positive effect on increase in nutrition knowledge.

Since there is an overall viewing impact on nutrition knowledge, we wish to determine if various viewing conditions contribute differentially to the overall gain in nutrition knowledge.

> Question 2: Do children who view Mulligan Stew in school show a percent increase in nutrition knowledge that is different from the increase shown by children who view it at home, disregarding whether or not the children use the comic/workbook?

Here we find that at each grade level those children who viewed Mulligan Stew in a classroom setting gained more on the nutrition knowledge test than did those who viewed the series at home. Fourth-graders viewing in school with a total gain of 36% gained about 13% more than their counterparts who viewed at home. Fifth graders viewing in school gained about 14% more than their counterparts who viewed at home for a total gain of 36%. Sixth graders viewing in school gained a total of 24% for a slight edge of 5% over their counterparts who viewed at home.

- The differential effects of viewing in school versus viewing at home on increase in nutrition knowledge are quite pronounced for 4th and 5th graders, but slight for 6th graders, with in-school viewing fostering the stronger favorable effects.

> Question 3: Do children who use the comic/workbook show a percent increase in nutrition knowledge that is different from the increase shown by children who do not use it, disregarding whether or not the children view the series in school or at home?

The data show that the differential effects between having and not having the comic/workbook are even more pronounced than the difference between viewing in and out of school. Fourth graders using the comic/workbook gained a total of 40%, 20% more than 4th graders not having the comic/workbook. Fifth graders with the comic/workbook gained 40%, 22% higher than those without it. Sixth graders gained 29%, 14% higher than those without it.

- The differential effects on increase in nutrition knowledge of using the comic/workbook as opposed to not using it are very strong in favor of the comic/workbook.

Question 4: Do the various combinations of viewing conditions (in-school/with comic, in-school/without comic, at home/with comic, at-home/without comic) have differential impacts on increase in nutrition knowledge?

Here again the data provides a clear-cut answer, supportive of what one would intuitively hypothesize to be the most effective way to deliver a series like Mulligan Stew. For each of 4th, 5th and 6th grades there is a clear ranking of percent gain by experimental condition. The in-school/with comic condition produces the greatest gains (48% for 4th graders, 44% for 5th graders, and 28% for 6th graders), followed by at-home/with comic (25%, 27% and 29% for 4th, 5th and 6th graders, respectively). Third comes viewing in school/without the comic, which shows about the same gain in nutrition knowledge as the entire experimental group as a whole. Definitively last, the substantially below the increases shown by the other experimental groups, is the at-home/without comic viewing condition which shows only 15%, 9% and 10% gains in nutrition knowledge for 4th, 5th and 6th graders, respectively.

The answer to the question of under what conditions was nutrition knowledge best conveyed by Mulligan Stew is unambiguous:

- Greatest gains are produced at all grade levels viewing in school and using the comic/workbook.

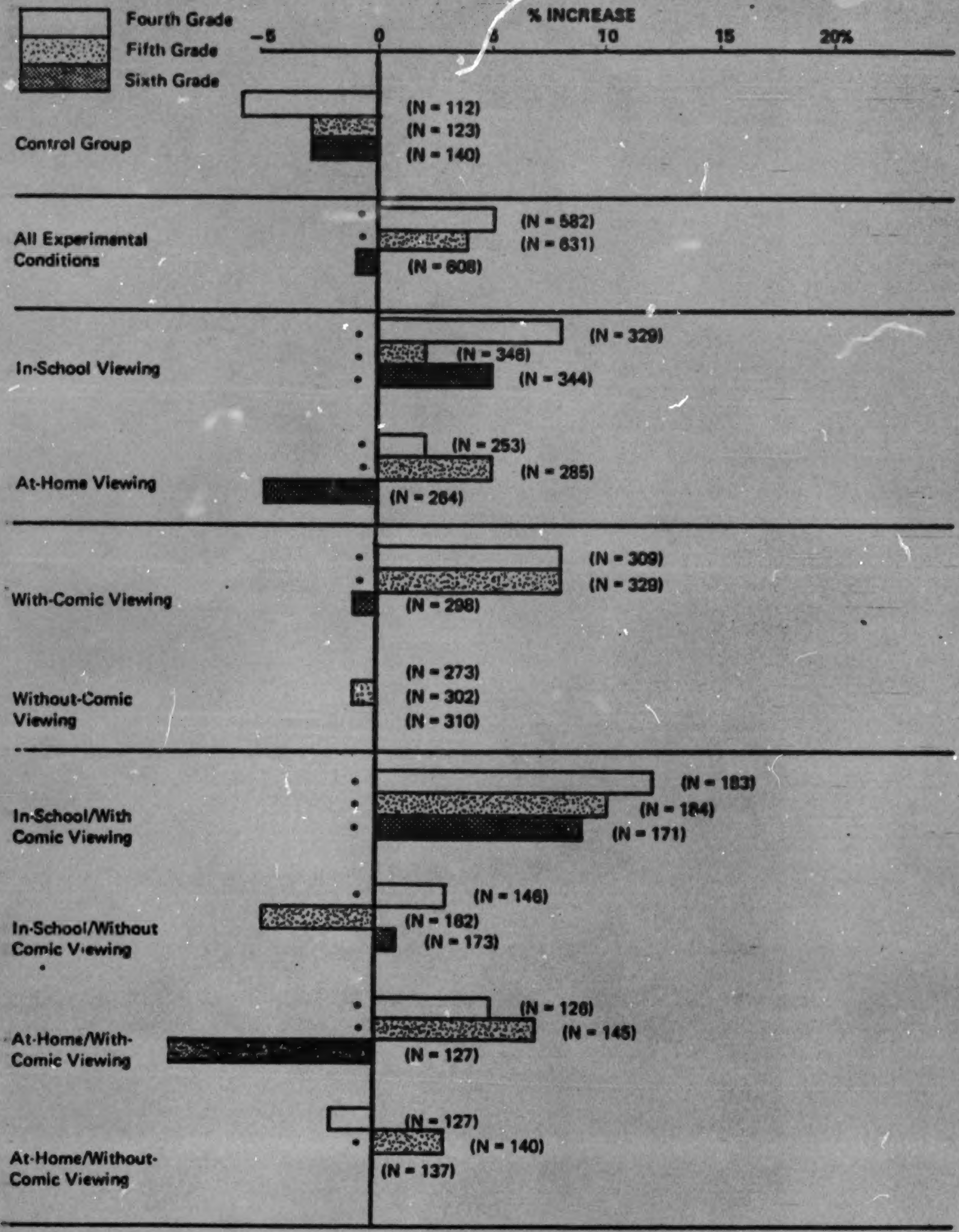
- Second greatest gains are achieved viewing at home with the use of the comic/workbook

- Third greatest gains are obtained viewing in school without the comic

- The poorest gains are produced when children view the series at home without the comic, although these gains are still significantly greater than the control groups.

TABLE 8

PERCENT INCREASE IN NUMBER OF POSITIVE NUTRITION-RELATED BEHAVIORS, PRETEST TO POST-TEST



Impact on Nutrition-Related Behaviors

Table 8 depicts the impact of viewing the Mulligan Stew series on increasing the incidence of nutrition-related behaviors addressed in the study. Inspection of the table shows two striking facts: the control group lost ground at each grade level; and among the experimental groups consistent effects were not produced at each grade level.

> Question 1: In general, does viewing Mulligan Stew result in a positive effect on percent increase in nutrition-related behaviors?

The answer to this question is "Yes" for the total experimental groups in the 4th and 5th grades, who gained 11% and 7% more than their control groups, respectively. For 6th grade experimentals, who also lost ground, the answer is "No."

- In general, viewing Mulligan Stew has a positive effect on percent increase in nutrition-related behaviors for 4th and 5th graders, but not for 6th graders.

Since there is a positive effect on 4th and 5th graders we shall continue to decompose these effects. We will not analyze the 6th grade any further, except to note that the apparent behavior of 6th graders in this area is at the least erratic. There may be many possible explanations for this, among them the often bizarre effects of early adolescence.

> Question 2: Do children (in 4th and 5th grades) who view Mulligan Stew in school show a percent increase in nutrition-related behaviors that is different from the increase shown by children who view it at home, disregarding whether or not they have the comic/workbook?

Here we find different effects of in-school versus at-home viewing on 4th and 5th graders. Fourth graders who viewed in school did about 6% better than those who viewed the series at home. On the other hand, 5th graders who viewed at home did about 3% better than those who viewed in school.

- The in-school/at-home viewing conditions have opposite effects on 4th and 5th graders. Fourth graders who view in school show a greater percent increase in nutrition-related behaviors, while 5th graders who view at home show the greater increase.

Question 3: Do children (in 4th and 5th grades) who use the comic/workbook show a percent increase in nutrition-related behaviors that is different from the increase shown by children who do not use it, disregarding whether or not they view the series in school or at home?

Returning to Table 8 we find a clearcut answer to this question — having the comic book is associated with greater increases than not having it by 8% for 4th graders and 9% for 5th graders.

- Use of the comic book produces greater percent increase in nutrition-related behaviors than not having it, among 5th and 5th graders.

Question 4: Do the various combinations of viewing conditions (in-school/with comic, in-school/without comic, at-home/with comic, at-home/without comic) have differential impacts on percent increase in nutrition-related behaviors (among 4th and 5th graders)?

Inspection of the lower section of Table 8 indicates that the in-school/with comic combination produces the most pronounced results for both 4th and 5th graders, followed by the at-home/with comic viewing condition. Neither of the viewing conditions without the comic book produce a significant result.

- We conclude that having the comic book is the single most important factor in affecting percent increase in nutrition-related behaviors. However, the combination of having the comic book interacts with viewing in school to produce the strongest effect among the various viewing conditions for both 4th and 5th graders.

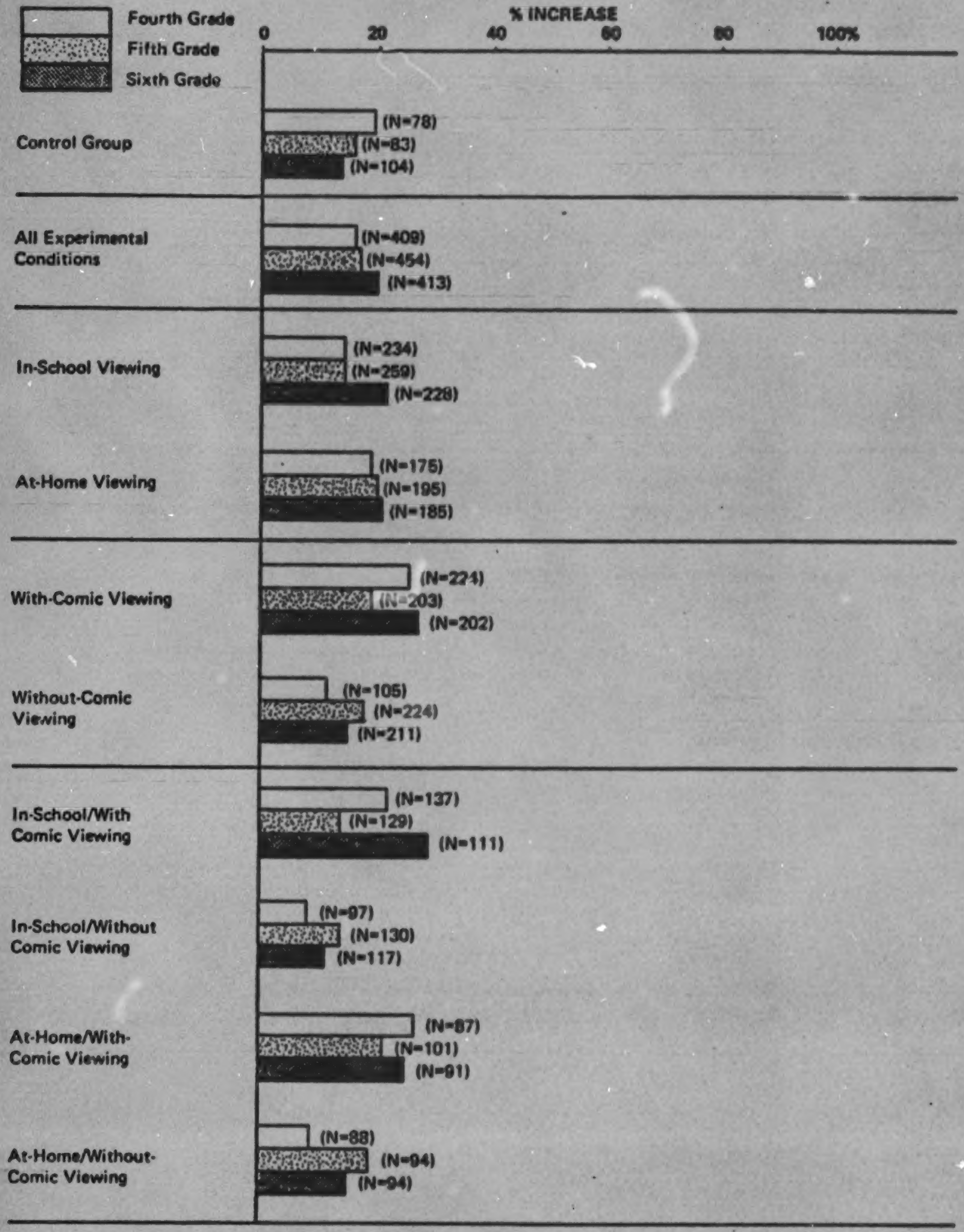
Impact on Food Intake Intentions

Two outcome measures have been used as indicators of the impact of viewing Mulligan Stew in this area.

The first outcome measure, the percent of children who selected inadequate diets (in terms of 4-4-3-2) on the pretest whose post-test selection equalled or exceeded this standard is presented in Table 9. Comparing the total experimental groups with their grade level control counterparts we find that viewing Mulligan Stew had no demonstrable effects on the selection of a balanced diet in terms of the 4-4-3-2 formula.

TABLE 9

PERCENT OF CHILDREN WHOSE POST-TEST FOOD SELECTION EQUALS OR EXCEEDS THE 4-4-3-2 DIET AMONG THOSE CHILDREN WHO WERE DEFICIENT IN ONE OR MORE FOOD GROUPS IN THE PRETEST SELECTION



There was a serious problem with measurement of this outcome measure. The children were presented with four grids of pictures of foods containing 41 different pictures plus a "name your own" box, one grid each for breakfast, lunch, dinner and a snack. The most overwhelming result on this section was that many 4th, 5th and 6th graders, when confronted with an overchoice situation, have "eyes much bigger than their stomachs." Large numbers of foods were selected for each meal by certain children and, as a result, these children had equalled or exceeded the 4-4-3-2 formula on both pretest and post-test.

- Viewing the Mulligan Stew series has no discernible impact on the diets the children selected (in terms of the 4-4-3-2 formula) when given free choice on a menu containing a large number of foods.

The second outcome measure used as an indicator of program impact in the area of food intake intentions -- percent reduction pretest-to-post-test in the ratio of junk foods to nutritious foods selected -- is presented in Table 10. Viewing the Mulligan Stew series had strong effects in terms of this outcome measure.

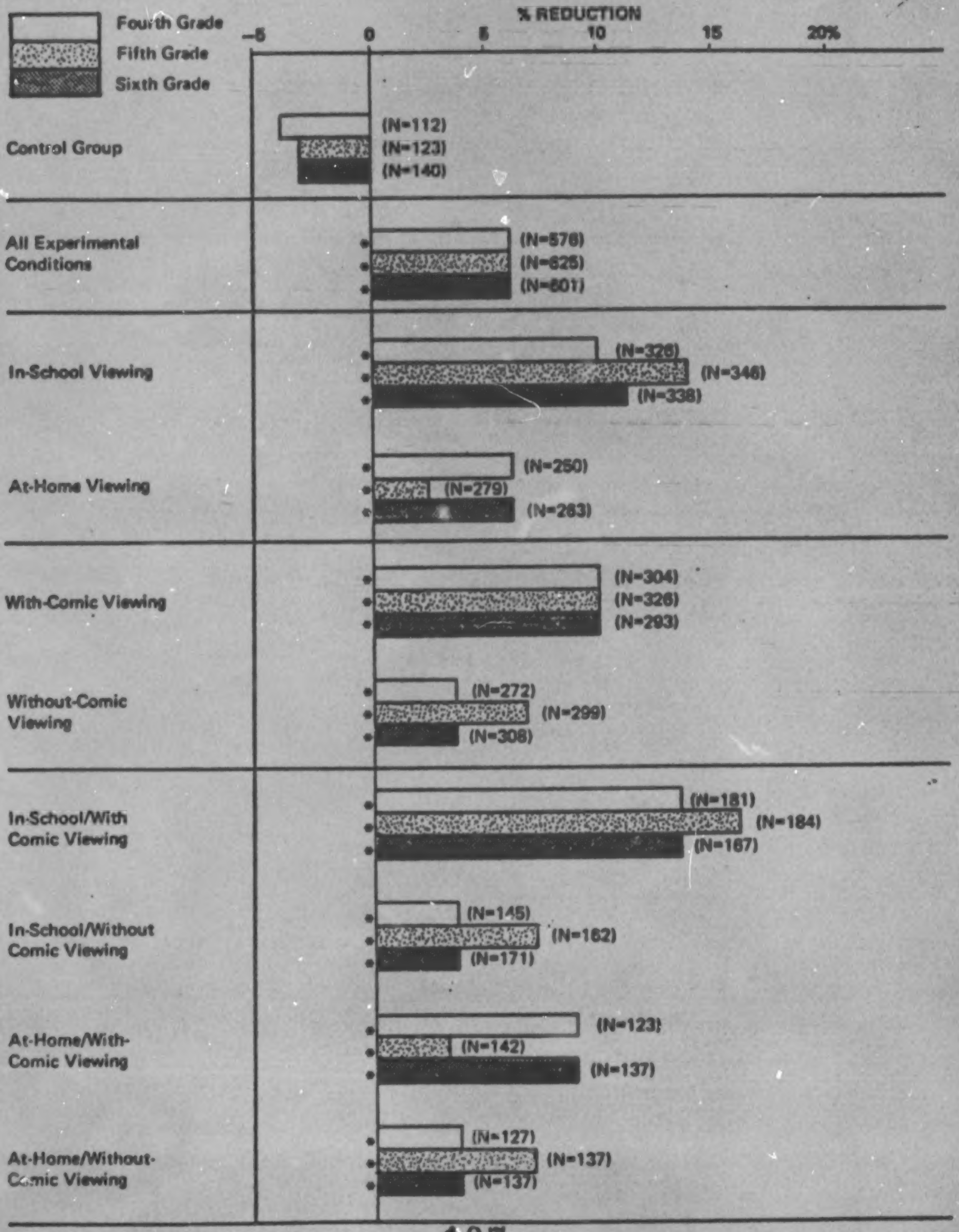
> Question 1: In general, does viewing Mulligan Stew result in a decrease in the ratio of junk foods to nutritious foods children select when given free choice of a wide variety of foods?

Comparing the total experimental group with the control group, the answer to this question is a resounding "Yes." At all grade levels, the control group lost ground -- that is, selected a higher ratio of junk to nutritious foods on the post-test than they did on the pretest -- while the children who viewed the series reduced their ratio of junk to nutritious foods by 7% at all grade levels. The difference between controls and experimentals is about 10% in favor of the viewers at all grade levels.

- In general, viewing the Mulligan Stew series produced a pronounced reduction in the ratio of junk to nutritious foods children selected when given free choice of a large number of foods.

TABLE 10

PERCENT REDUCTION IN MEAN RATIO OF JUNK TO NUTRITIOUS FOODS SELECTED, PRETEST TO POST-TEST



Question 2: Do children who view Mulligan Stew in school show a reduction in the ratio of "junk" to nutritious foods selected that is different from the reduction shown by children who view it at home, disregarding whether or not the children use the comic/workbook?

Inspection of Table 10 indicates that there is indeed a differential impact depending upon viewing in school or at home, at all three grade levels. Fourth graders who viewed in school reduced the "junk"/nutritious ratio by 10%, 4% more than 4th graders who viewed at home. Fifth graders who viewed in school reduced the ratio by 14% or 11% more than their counterparts who viewed at home. Sixth graders who viewed in school reduced their "junk"/nutritious ratio by 12%, while those viewing at home reduced theirs by only 6%.

- The impact of viewing Mulligan Stew on reducing the "junk" to nutritious foods ratio in food selection is markedly higher for children who viewed in school than for those who viewed at home.

Question 3: Do children who use the comic/workbook show a reduction in the ratio of "junk" to nutritious foods selected that is different from the reduction shown by children who do not use it, disregarding whether or not the children view the series in school or at home?

Returning to Table 10, we see that for all grade levels those children who had the comic/workbooks reduced their "junk"/nutritious ratio by 10% while those who did not have the comic/workbook only reduced their ratios by 4%, 7% and 4% for 4th, 5th and 6th graders, respectively. Again, the answer to this question is clear-cut:

- Children at all three grade levels who had the comic/workbook reduced the ratio of "junk" to nutritious foods selected substantially more than those who did not have the comic/ workbook.

Question 4: Do the various combinations of viewing conditions (in school/with comic, in-school/without comic, at home/with comic, at-home/without comic) have differential impacts on decrease in ratio of "junk" to nutritious foods selected?

The percent reductions in the junk to nutritious foods obtained under the in-school/with comic viewing condition dominate Table 10. Under these conditions, 4th graders evidenced a 14% reduction; 5th graders a 16% reduction; and 6th graders, a 14% reduction.

The remaining picture is not so clear or consistent. For 4th and 6th graders the at-home/with comic is clearly next in strength of effects with a 9% reduction for both grade levels, while both the in-school/without comic and at-home/without comic viewing conditions tie for last place with 4% reductions. The fifth grade ratio reductions, while positive simply do not follow a readily explainable pattern, with the two without-comic book conditions showing higher reductions than the at-home/with comic condition.

- The in-school/with comic viewing condition demonstrates a markedly greater reduction in the "junk" to nutritious foods ratio than any other combination of viewing conditions, although any viewing condition is much better than none at all.

Impact on Breakfast-Eating Behavior

The outcome measure for this impact area -- percent increase in eating breakfast -- is displayed in Table 11.

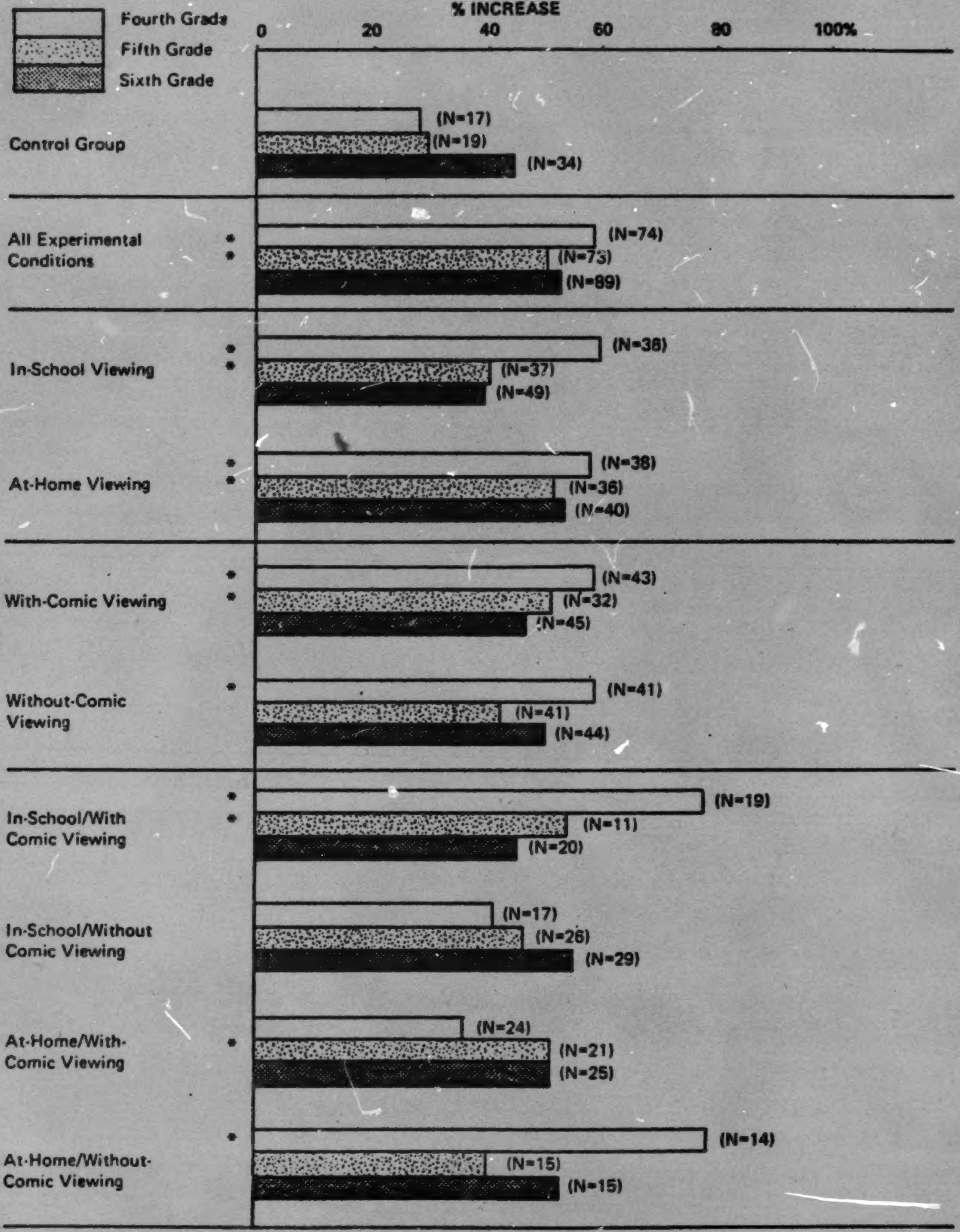
Question 1: In general, does viewing Mulligan Stew result in a positive effect on percent increase in eating breakfast?

Comparing the control groups with the general experimental groups in Table 11, we find at fourth and fifth grade levels that viewing Mulligan Stew does result in a higher percentage of those who had not eaten breakfast the day of the pretest doing so on the day of the post-test. Among 4th grade experimentals there was a gain of about 58%, 28% more than the 4th grade controls. In 5th grade, there was an increase of 50%, or 20% more than the controls; and in 6th grade, a gain of 52%, but this was only about 8% more than the 6th grade controls, the difference not being statistically significant.

A word of warning is in order about this outcome measure. The percentages discussed above (as well as all those presented in Table 11) are based on very small numbers of children, as most indicated they had eaten breakfast on the pretest. The percentages are, therefore, quite unstable. The problem of a small base upon which to compute percentages becomes even more exacerbated when we attempt to examine more specific viewing conditions. Therefore we will not elaborate the analysis for this outcome measure beyond looking at the experimental group as a whole.

TABLE 11

PERCENT OF CHILDREN WHO ATE BREAKFAST THE MORNING OF THE POST-TEST AMONG CHILDREN WHO DID NOT EAT BREAKFAST ON THE MORNING OF THE PRETEST



- Viewing the Mulligan Stew series has a positive effect at fourth and fifth grade levels in increasing the incidence of eating breakfast. This is not evidenced for sixth grade.

Not only is Mulligan Stew related to an increase in eating breakfast but it also is related to an increase in the number of non-junk foods eaten at breakfast. When compared to their control group counter-parts, both 4th and 6th graders show a significant gain in the number of non-junk foods eaten for breakfast. These differences, however, are fairly small.

Number of Non-JunkFoods Eaten for Breaifast

	All Experimental			Control		
	Pre	Post	Gain	Pre	Post	Gain
4th grade	2.08	2.24	+.16*	2.08	2.07	-.01
5th grade	2.20	2.36	+.14	2.04	2.10	+.06
6th grade	2.21	2.29	+.08*	2.22	2.04	-.18

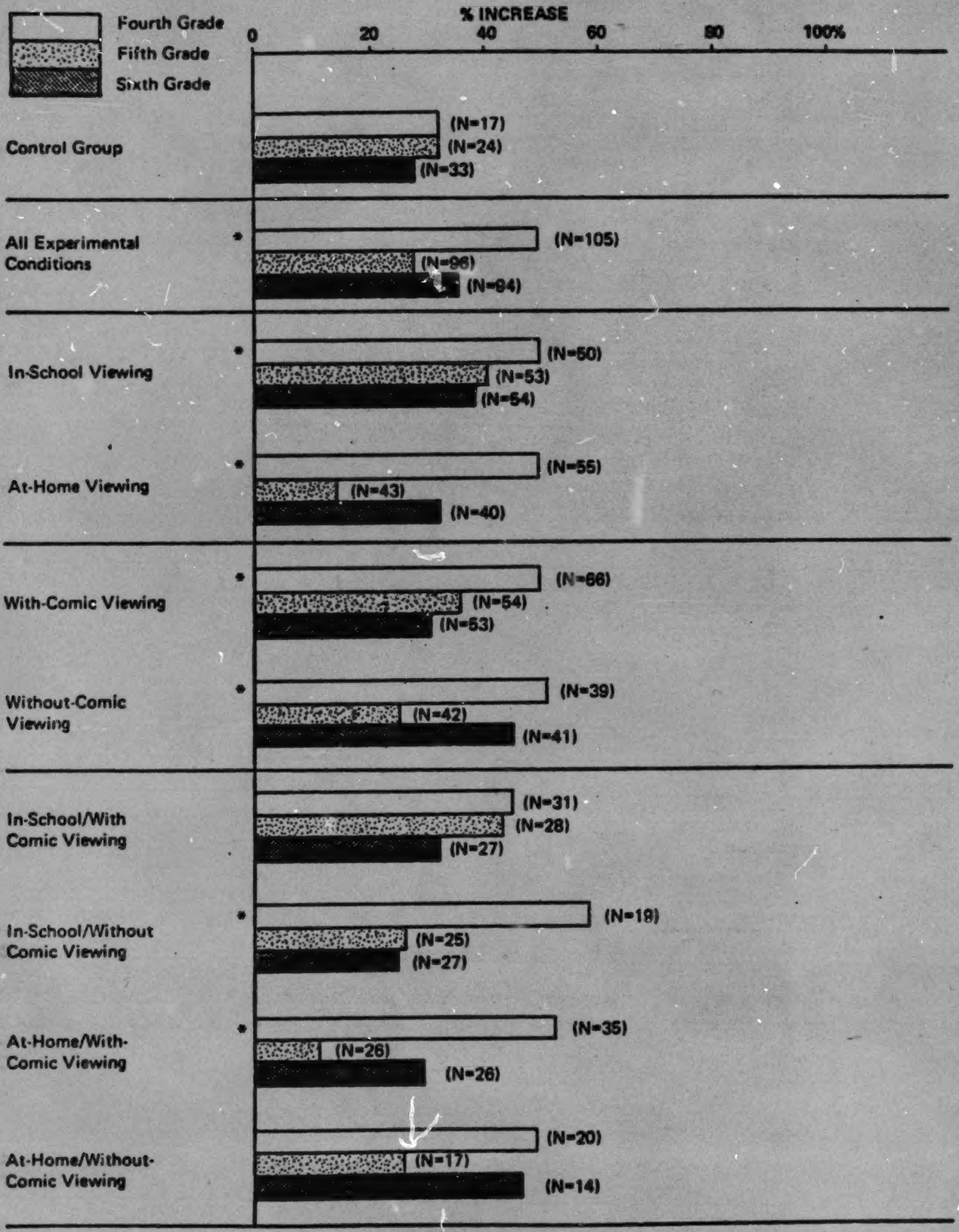
Impact on Attitude toward Learning about Food from Other Kids

The outcome measure used as an indicator of program i the percent of children who indicated on the pretest they could not learn about food from other kids who indicated on the post-test that they could -- is displayed in Table 12.

Question 1: In general, does viewing Mulligan Stew result in a positive effect on the percent of children who feel they can learn about food from their peers?

TABLE 12

PERCENT OF CHILDREN INDICATING ON POST-TEST THAT THEY COULD LEARN ABOUT FOOD FROM OTHER KIDS AMONG CHILDREN WHO INDICATED THAT THEY COULD NOT LEARN ABOUT FOOD FROM OTHER KIDS



Comparing the control and total experimental groups in Table 12, we find mixed results relative to this question. The 4th and 5th grade control groups each gained 30% while the 6th grade controls gained about 27%. The 4th grade experimentals gained 48%, a definitive 18% edge over their control counterparts, while 6th grade experimentals gained about 10% more than their controls. Fifth grade experimentals as a group, gained the same as their controls; about 27%. On the 4th grade gains were significant.

- In general, the 4th grade viewing groups showed definite gains over their control group counterparts in terms of feeling they can learn about food from their peers. The 5th and 6th grades showed no gain over their controls.

Question 2: Do children who view Mulligan Stew in school show an increase in the tendency to feel that they can learn about food from their peers that is different from the increase shown by children who view at home, disregarding whether or not the children use the comic/workbook?

Returning to Table 12, we again find mixed results in terms of the in-school/at-home contrast. Fourth graders show no difference, while both 5th and 6th graders show markedly greater gains when viewing in school as opposed to viewing at home (differential gains of 24% and 8%, respectively). We conclude that:

- The in-school/at-home distinction has no effect for fourth graders in terms of the increase in number of children who feel that they can learn about food from their peers. In fifth and sixth grades there is an advantage on in-school viewing over at-home viewing of 24% and 8%.

Question 3: Do children who view Mulligan Stew in school show an increase in the tendency to feel that they can learn about food from their peers that is different from the increase shown by children who view it at home, disregarding whether or not the children use the comic/workbook?

Again we find mixed results in terms of the comic/no-comic contrast for this outcome measure. Fourth graders seem to be basically unaffected by this distinction, 5th graders are moderately affected (a 10% difference in gain in favor of use of the comic/workbook), and 6th graders are also affected (showing a 14% differential gain).

- The comic/no-comic distinction has no effect on 4th graders in terms of the percent increase in number of children who feel they can learn about food from their peers, while use of the comic book has the edge in 5th and 6th grades, with 10% and 14% advantages, respectively.

Question #4: Do the various combinations of viewing conditions (in-school/with comic, in-school/without comic, at-home/with comic, at-home without comic) have differential impacts on percent increase in children who feel they can learn about food from their peers?

Inspection of the lower section of Table 12 shows inconsistent effects across the four conditions and the grade levels. Here, again, we have encountered the problem of too small numbers to calculate stable percentages, and little confidence should be placed in the effects depicted.

Impact on Awareness of 4-H

Table 13 depicts the percent increase in number of children aware of 4-H for the various viewing conditions.

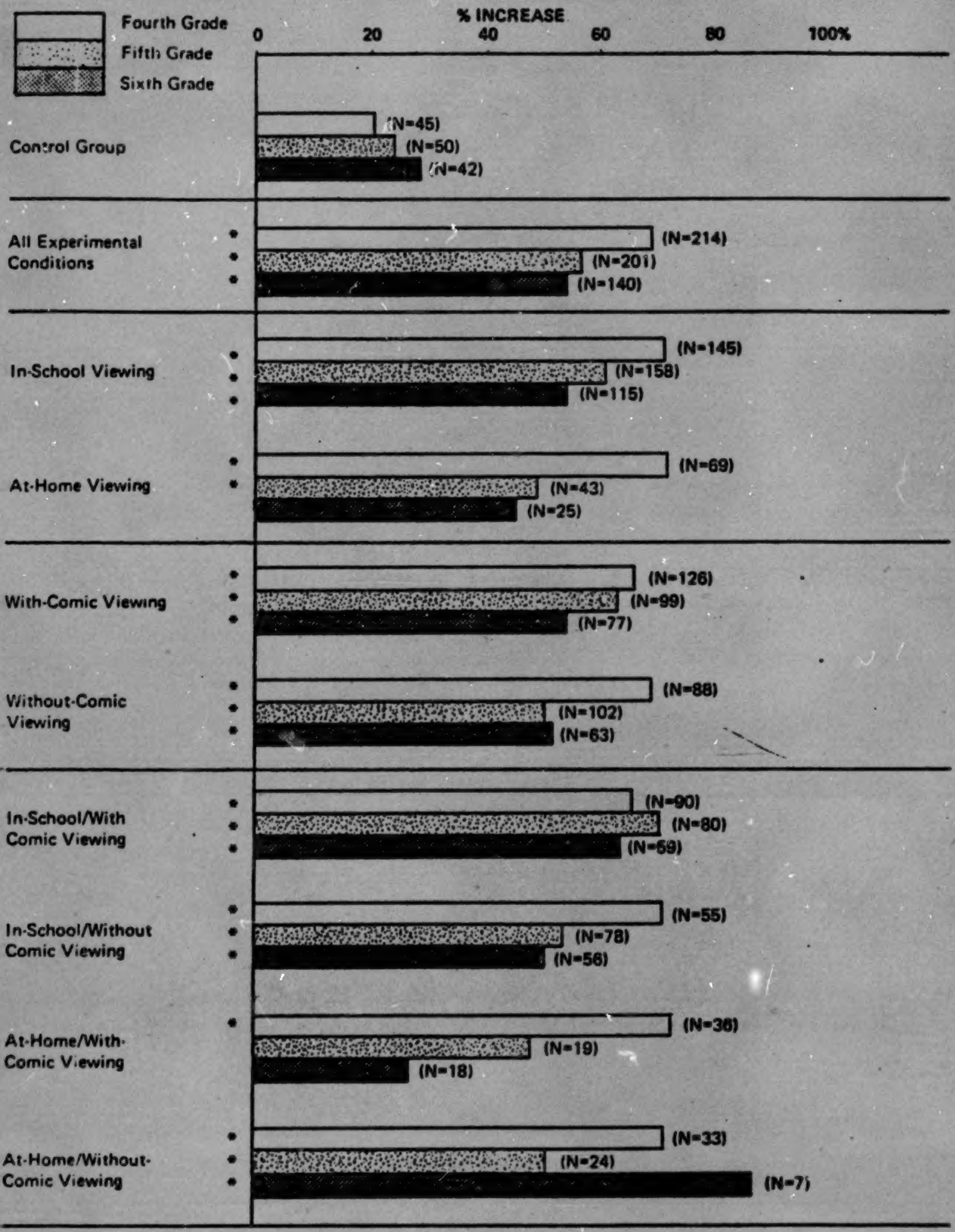
Question 1: In general, does viewing Mulligan Stew result in a positive effect on the percent of children aware of 4-H?

Inspection of the upper section of Table 13 shows that at each grade level the viewing groups in general became much more aware of 4-H than their control counterparts. Fourth grade viewers gained a total of 65%; 45% more than their controls. Fifth graders gained 34% more than their controls for a total gain of 58%; and 6th graders made a total gain of 55%; 28% more than their controls:

- In general, viewing the Mulligan Stew series has a powerful impact in terms of increasing awareness of 4-H at each grade level.

TABLE 13

PERCENT OF CHILDREN WHO HAD HEARD OF 4-H ON THE POST-TEST AMONG CHILDREN WHO HAD NOT HEARD OF 4-H ON THE PRETEST



Question #2: Do children who view Mulligan Stew in school show a percent increase in awareness of 4-H that is different from the increase shown by children who view it at home, disregarding whether or not the children use the comic/workbook?

Inspection of Table 13 indicates that the in-school/at-home viewing contrast has little impact on the 4th graders, while in-school viewing gives 5th and 6th graders about an 11% edge over their peers who viewed the series at home.

- Viewing in school as opposed to viewing at home has no impact on 4th graders in terms of the percent increase in the number of children made aware of 4-H, while viewing in school rather than at home has a moderately stronger impact on 5th and 6th graders.

Question 3: Do children who use the comic/workbook show a percent increase in awareness of 4-H that is different from the increase shown by children who do not use it, disregarding whether or not the children view the series in school or at home?

- The comic/no-comic contrast seems to produce no meaningful difference in the increase in percent of children aware of 4-H at any of the three grade levels.

Question 4: Do the various combinations of viewing conditions (in-school/with comic, in-school/without comic, at-home/ with comic, at-home/without comic) have differential impacts on increased awareness of 4-H?

Again we are confronted at this level of analysis with insufficient numbers of children upon which to complete stable percentages and not much confidence should be placed in the erratic effects depicted in the lower section of Table 13.

Current participation of 4-H activities or expressed interest in participation in 4-H was elicited from the experimental and control groups. However, no consistent effects were found in this data at any level of analysis.

Different Perspectives on the Impact Findings

There are numerous ways in which one might be interested in drawing comparisons within the data generated by this study. The preceding section presented one way of organizing the data to facilitate comparisons of the effects of the various experimental conditions on a specific outcome measure. Tables 14-40, presented in Appendix A, contain the same information as Tables 7-13 but are organized in a different way. The reader is invited to browse through these tables for a different pictorial view of the results. Tables 14-40 are organized in the following way:

- Tables 14-22 deal with 4th grade results;
- Tables 23-31 deal with 5th grade results;
- Tables 32-40 deal with 6th grade results;
- Each table compares the grade level control group with one of the nine possible experimental conditions on all seven of the outcome measures discussed in the preceding section.

Appendix B, Tables 41-47 present group means that were used to compute information presented in Tables 7-40.

Additional Descriptive Findings

This section will present additional findings of interest in this study. The student data will be presented first followed by a description of teacher responses.

Student Opinions on Mulligan Stew. Students were asked to indicate what they liked in the Mulligan Stew shows. Highest incidence of selection was for the Mulligan Stew Kids, the Music and Songs, and Wilbur (approximately: 46%). Lowest incidence of selection was for Puppets (approximately: 27%).

Positive feelings about the show exhibited a strong grade effect. That is, 85% of fourth graders responded positively to the question, "How did you like Mulligan Stew?" Positive responses were elicited from 71% of fifth graders and 53% of sixth graders.

Students/Parents Viewing Patterns for Mulligan Stew. Incidence of viewing the series was much lower for the "at-home" group than for the "in-school" group. Reports of viewing any one show varied from 31% - 55% for the "at-home" group; the "in-school" group reported 68% - 91% viewing any one show.

The incidence of parents viewing the series is much higher for the "at-home" group than for the "in-school" group. One or both parents watching Mulligan Stew was reported by 27% - 41% of the "at home" group; the "in-school" group reported 6% - 13% of parents viewing the show.

Effect of Reading Ability of Mulligan Stew Impact. Reading ability had a significant effect on both pretest and post-test scores on the nutrition knowledge test. That is the "below grade level" reading groups scored consistently below that of the "at or above grade level" groups. However, both groups showed significant gains. (See Table 48 below)

TABLE 48

SCORES OF CORRECT ANSWERS BY GRADE LEVEL AMONG TWO LEVELS OF READING ABILITY

	AT OR ABOVE GRADE LEVEL		BELOW GRADE LEVEL	
	Pre	Post	Pre	Post
FOURTH GRADE	(N = 421)		(N = 153)	
MEAN NUMBER CORRECT	9.6	12.8	7.5	9.2
FIFTH GRADE	(N = 401)		(N = 201)	
MEAN NUMBER CORRECT	10.8	14.1	8.5	11.0
SIXTH GRADE	(N = 367)		(N = 180)	
MEAN NUMBER CORRECT	12.9	15.9	9.6	11.4

Using the algorithm $\frac{(\bar{x}\text{ post} - \bar{x}\text{ pre})}{((\bar{x}\text{ pre}))}$ the percentage change in correct answers on the nutrition knowledge test among two levels of reading ability by grade level are:

	AT OR ABOVE GRADE LEVEL	BELOW GRADE LEVEL
FOURTH GRADE	*33.3%	*22.6%
FIFTH GRADE	*30.6%	*17.6%
SIXTH GRADE	*23.3%	*18.8%

*Statistically significant ($p \leq .01$) over control group.

Selected Items of Nutrition Related Behavior. Over 70% of all students reported that they take breakfast. This high rate of response was evident on both the pretest and the post-test. Breakfast behavior showed a pattern of preference with Bread and Cereal items cited most frequently and Fruit and Vegetable items cited least frequently.

An analysis of the index created by combining the seven items measuring nutrition-related behavior yielded some significant results for certain grades under various experimental conditions (see pages 94-95); additionally an item by item analysis yielded some effects for selected items. Of seven activities measured group increases were registered as follows:

- Grade Four increased participation in 5 activities
- Grade Five increased participation in 4 activities
- Grade Six increased participation in 2 activities

In the Control 1 groups -

- Grade Four increased participation in 2 activities
- Grade Five increased participation in 1 activity
- Grade Six increased participation in 1 activity

Table 49 which follows details these findings.

TABLE 49

INCREASES IN REPORTING FOOD-RELATED ACTIVITIES AMONG EXPERIMENTAL AND CONTROL GROUPS FOR EACH GRADE*

(Note: "X" mark indicates increase from Pre to Post)

	EXPERIMENTAL			CONTROL I		
	GRADE 4	GRADE 5	GRADE 6	GRADE 4	GRADE 5	GRADE 6
Tried any new foods	X	X				
Fixed any meals	X	X			X	
Fixed family meals	a		a			
Gone grocery shopping						
Prepared food with a friend	X	X	X			X
Eaten food with a friend	X	X	X	X		
Shopped for food with a friend	X					

*Increase of 2% is cut-off point

a -- Increase in "In school with Comic Book" groups in 4th and 6th grade.

Family Income of Child. It may be noted that each teacher participating in the experiment estimated the total family income of the students in her class. However, our data analysis did not focus on detecting differences in impact by family income because the rough estimates provided by the teachers were not reliable enough.

Teacher Responses. Experimental teachers were requested to maintain a weekly activities log for the six weeks of Mulligan Stew and also to rate the series, the comic/workbook and the teacher guidebook. Ratings were on an 11 point scale (0 to 10) ranging from "Very Low" rating, 0, to "Very High" rating, 10. In addition, information was elicited on:

- subjects recommended for future TV programming
- positive/negative features of Mulligan Stew
- viewing behavior of teachers themselves
- nutritional instruction given to children prior to Mulligan Stew

Data from 59 teachers were processed, and the following results emerged:

> Teachers whose students viewed the programs in school saw more of the programs than teachers whose students viewed the programs at home. These viewing patterns parallel those found among students:
>
> The "In School" teachers rated the shows higher than the "At Home" teachers;
>
> The highest rating for the shows was for "The program as a nutrition-education resource in general" (6.9). The lowest rating was for "How much this show helped develop better nutrition behavior among your pupils" (5.6);
>
> 46 teachers received the guidebook. These teachers gave the guidebook very high ratings particularly on usefulness of unit questions and discussion questions (8.5 and 8.4);
>
> As experimentally indicated about half the students received the comic workbook. Of those teachers whose students received the comic/workbook most report using it both individually in classrooms (76%) and in group activities in the classroom (62%);

The comic/workbook was rated highest by the teachers in the category of "Pupil interest in the workbook" (8.7);

The most frequently recommended subjects for further TV series are Health (recommended by 73%) and Ecology (recommended by 71%). There were six write-in suggestions for a series on Career Education;

Amongst problems most frequently mentioned were those related to age level, timing of shows, and speed of action in shows, i.e., talking and singing too fast;

While there were many positive comments about the show there were no trends or repeated items.

IV CASE STUDIES

Introduction

The primary focus of this study is an evaluation of the impact of the Mulligan Stew series. A secondary focus is a survey of the distribution and training efforts within the states. This second component was designed as a case study, limited to the six states from which the sites had been selected for the impact evaluation. These states were Arkansas, Missouri, Oregon, Pennsylvania, Tennessee and Texas. The case studies were planned to satisfy three research objectives.

The first objective was to describe as fully as possible the specific planning and training efforts that took place. The second was to outline the delivery activities associated with scheduling the series and delivering the materials to the schools. The third was to estimate costs associated with all activities in the state related to Mulligan Stew.

In conducting case studies of distribution techniques and associated costs, the most serious constraints are the lack of consistent information and gaps in information. These are inevitable when a case study is conducted after-the-fact. For example, the sites are asked to deliver cost data on their Mulligan Stew efforts. Some of the data does not exist. Some of it must be separated out of other categories. Much of it is from memory. Since all of the data is retrospective, conclusions drawn from such data should be drawn with extreme caution.

Within these limitations, case study analysis, while soft, can provide useful data on techniques to improve delivery, cost in relation to numbers of children reached, errors to avoid, and activities to encourage.

In assessing costs for Mulligan Stew in each of the six case studies, the costs at the federal level, i.e., research and development, were not factored in. The total estimated costs for Extension Service, USDA were $716,000. The federal contribution to this effort is itemized as follows:

Comprehensive Plan	$10,000
Production	
Films	301,000
Supportive Materials	45,000
	346,000
Duplication - Distribution - Reporting	67,033
Evaluation	129,231
Estimated staff time @ $25K/year:	137,500
I Development of Preliminary plan - (1 Man year)	
II Production of Films and Materials - (2½ Man years)	
III Distribution, training, promotion - (1½ Man years)	
IV Research - (½ Man years)	
National 4-H Service Committee staff time for distribution and promotion, (Administration, Professional, Secretarial, Accounting, Shipping and Billing):	
Fiscal year 1973	$26,000

Since 4,000,000 4-H TV members have been enrolled nationally to-date for the Mulligan Stew program, the federal contribution to the per child costs equals 18¢.

Procedures

Ms. Eleanor Wilson, Project Officer for this study, contacted the state 4-H TV coordinators of each of the six states to apprise them of the study and to solicit their interest and cooperation. She arranged to have a short description of the evaluation sent to all states which were being considered for the study. Following this, Abt Associates staff called and arranged for the first set of site visits, which were devoted to preparation of the student impact evaluation. The case study effort was concentrated on the second set of site visits. For these, a letter was prepared and sent to each of the state TV coordinators, reminding them that a second site visit had been planned for the case study component of the project. The letter listed the staff to be interviewed, suggested dates for the interviews proposed, and promised that the interview guide to be developed for the case studies would be mailed to the TV coordinator well before the site visit was to take place. Field staff from Abt Associates called each of the states and completed arrangements for the visits via telephone. In all cases the interview guide was sent to the states at least one week before the site visit.

The TV coordinator arranged for all interviews during the site visit. Some were conducted as group interviews; others were with single individuals. All were taped. This procedure ensured that reports prepared later were entirely accurate.

At most sites, the staff interviewed included

TV Coordinator
County Agents
Director or Associate Director of State Extension
Director of 4-H
EFNEP representatives

Often, staff interviews also included area youth specialists, nutritionists, and educational specialists.

The interviews, conducted over a two-day period, started with the questions listed in the interim guide. Interviews were conducted in an open-ended manner, however, in order to encourage respondents to discuss aspects of the program that were not included or highlighted in the interim guide.

Following the site visits, calls were frequently made from Abt Associates for additional information, which, whenever possible, the state TV coordinator supplied. All states received letters of appreciation from Abt Associates at the conclusion of the site visits. These letters were more than a formality; all field staff were greatly appreciative of the kindness shown to them and the interest and spirit of cooperation the Abt staff brought to the interviews.

The section which follows contains the interview guide for the case studies.

Interview Guide
for Mulligan Stew Site Visits

Site: ____________________

Date: ____________________

Location of Interview ____________________

____

____

Time: From __________ To: __________

Respondents:

Name	Position	Years with Extension	Phone # for Later Contacts if necessary

The following question areas are to be addressed during the site visits by the Abt Mulligan Stew (MS) evaluation staff. Of interest is the organization of the MS project at each site and the costs associated with the project.

The interviewers will conduct their visits in an informal open ended style. The conversations may be conducted in a group or as a one-to-one interview whichever extension staff prefers.

If agreeable, Abt staff will tape some of the interviews.

Suggested Respondent for Question				
State Staff	District Staff	Extension Director	I. PROGRAMS IN THE SITE	Notes
X	X		1. Origin of 4-H clubs Any in the schools? Any outside the schools? How many of each?	
X	X		2. Other activities? Describe EFNEP? School? Community Development Program?	
X	X		3. How are staff assigned to the programs? Are same staff assigned to EFNEP and 4-H? Is there a working relationship between EFNEP and 4-H?	
X	X		4. Did Extension plan activities for MS beyond the TV broadcasts?	
X	X		5. When does enrollment take place? Is it encouraged year round? What was your 4-H membership attrition rate in 1974-74? How does that compare with the previous 5 years? What was your 4-H program for 1973-74?	
	X		6. Do you have any training sessions for volunteer leaders? What is the turnover rate for volunteer leaders?	

State Staff	District Staff	Extension Director	II. ORGANIZATION TOPICS	Notes
X	X	X	1. When, how did you yourself first hear of the Mulligan Stew program?	
		X	2. Have you ever seen any of the programs?	
X	X	X	3. What was your reaction to the films? Other Mulligan Stew materials?	
X	X		4. Have you ever worked with a similar media package? Note: Probe. ES has several TV Films. Have you worked with them? They are: a) 4-H TV Action Films (civil defense) 10 part B & W b) Photography - 6 part c) 4-H TV Science I & II d) Texas Electric Series e) Living in a Nuclear Age f) Other	
X	X		5. How easy/difficult did you find it to "sell" the Mulligan Stew package? - to the Extension Staff - to people outside of Extension	
X	X		6. To whom did you "sell" the package: Did you concentrate on schools or go elsewhere? Note: Prime only after respondent answers; i.e., 4-H - EFNEP Volunteer Leaders Other Clubs, i.e., Girl Scouts, Boy Scouts, Camps	

Sta Staff	District Staff	Extension Director	
X	X		7. What were the main problems with getting the package across (accepted)? On the state level: Funding it? Selling it to staff? On the local level: Selling it to - community? - School Administrators - Classroom Teachers - Industry/other
X	X	X	8. What effects did the program have on - attitudes of community towards Extension, 4-H, and the University; - membership/attendance at 4-H functions? - other?
X	X		9. Can you estimate # 4-H TV members that resulted from the Mulligan Stew programs?
	X		10. How have these new members been integrated into other 4-H activities? Which? - 4-H Camps - 4-H EFNEP - 4-H Special Interest Club - Other Can you estimate the number of 4-H TV members that have been involved in any of the above activities?
X			11. What distribution procedures were used in your state? How could they have been improved?

State Staff	District Staff	Extension Director	
X			12. Did National 4-H provide any support? How could this have been improved? **Note:** Extension Service provided cost sharing arrangements on all auxiliary materials except comic books. (50% cost sharing) Comic books full price of 10¢. Extention Service absorbed full costs of total production, distribution of free kits and some training by the National 4-H project officer (E.Wilson).
X	X		13. What problems did you encounter at state/ local levels in getting Mulligan Stew programmed for your community? - Budget - TV scheduling time - Procurement of Materials
	X		14. Were you able to integrate Mulligan Stew with other Extension programs (also 4- clubs - camps) such as EFNEP? Describe.
X	X	X	15. Did you encounter any antagonism towards the programs? Any great interest? (By whom?
X	X	X	16. To what extent has TV programming become part of 4-H extension in your county?
X	X	X	17. Do you think TV programming should be a part of 4-H Extension in the future? - Who should pay for these programs? R & D? Films themselves? - What should future programs present

S S	District Staff	Extension Director	
X	X		18. Did you or your staff do any training or hold workshops or attend workshops related to Mulligan Stew? Attend workshops: Where, who attended Conducted training/workshops: Where, who attended.
	X		19. Did you or your staff spoak before any groups about Mulligan Stew? Did you use the slide-tape presentation for training or presentations to teachers, volunteers, other? Who? Note: Slide-tape presentation available on loan from state.
	X		20. Was there any publicity about Mulligan Stew? Ex: "Mulligan Stew Day" - Papers/Radio/TV (Get copies of such publicity)
	X		21. How does the amount of media coverage/community interest in Mulligan Stew compare with other 4-H programs? Detail. - Media coverage? - Community interest?
	X		22. Was there any participation by industry, schools, business, school lunch programs or other organizations in this program? What form did it take? (Prime only after respondent answers) - 4-H camps - Exhibits - Bake Sale - Judging Days - Bird Feeding Program

III. COST QUESTIONS *

1. Did you have a budget for the Mulligan Stew Program?

   Can you provide us with a copy of the budget? Do you have specific time allocations or time commitment plans for staff to work on Mulligan Stew activities or programs?

2. What are your agency's sources of income?

Source	Total Amount	Labor Alone	Materials Alone	or % budgeted for Mulligan Stew
Regular Appropriated Extension Funds (1862)				
EFNEP				
State 4-H Foundation				
1890 Funds				
Other: -Income from Mulligan Stew Comic Books (member manuals)				
-Local dues for 4-H members				

Total $ budgeted for Mulligan Stew $ ____________

(Note: Total budget includes all line items including labor.)

*Questions 1, 2, 3, 5 for State level only. All others for State and District as appropriate.

3. How much of funds which have been spent for Mulligan Stew were earmarked for State level activities? District? County? Local? (Use back of page for additional district, county or local site).

Allocation of Funds	State	District (for each District)	County (for each County)	Local (for each local site)
Total $ ________	______	________	________	________
		________	________	________
		________	________	________
		________	________	________
		________	________	________
		________	________	________
		________	________	________

4. Using your budget or your best recollection, can you tell us how much of the total expenditures for Mulligan Stew were spent in the following areas? Please indicate those items purchased by you and those purchased by others. (Others may be schools, children, community groups).

	$ Expended by program	$ Expended by Others	Specify Others
A. Travel			

B. Consumable Supplies:

Sets of Mulligan Stew films or Video Tape ________

Film-related materials ________

Comic Books (Members Manuals) ________

Teacher's Manuals ________

Buttons/Records/Special Materials ________

Brochures, PR releases ________

Printing Costs ________

Office Supplies ________

	$ Expended by program	$ Expended by Others	Specify Others
C. Rental and Purchase of Equipment (Projectors, Typewriters)			
D. Space and Utilities, i.e. main office; site offices, telephone, janitorial (Note: This could be as % total budget from state accountant, then pro-rate for MS.			
E. Capital Expenditures (over $100.)			
F. Rental of Films			
G. Other			

5. Please give us an organization chart for the State Extension Service, indicating the staff positions for the Mulligan Stew Program at the state, district, and/or county, and local level.

6. Are there additional staff, part-time or full-time, who worked on the Program, to whom you paid a salary or wage, who are not listed on the chart above? (do not include volunteers)

	Name	Job Title	Agency or Affiliation
1.			
2.			
3.			
4.			

7. For each of the persons listed in items #5 and #6 above, please give us the following information:

Name/Job Title	(Days) Total time on Mulligan Stew	(Weeks or Months) Time span of Mulligan Stew work	Annual Salary	-- or-	Hourly Rate
Supervising Agents					
Field Staff					

8. Do salary figures include fringe benefits? If not, please indicate the average fringe benefit rate for Extension Service employees.

9. Can you estimate how each staff person spent time working on Mulligan Stew, using the staff and their time on Mulligan Stew listed in question #7?

Job Title: ____________________

Total days devoted to Mulligan Stew ____

% of time spent:

distribution ____
administration ____
fund raising ____
publicity or public info. ____
training ____
staff ____) total
teachers ____) =training
volunteers ____) time
enrollment ____
follow-up ____
T.V. Station Contacts/arrangements ____
General Servicing ____
Other: (specify) ____

Job Title: ____________________

Total days devoted to Mulligan Stew ____

% of time spent:

distribution ____
administration ____
fund raising ____
publicity or public info. ____
training ____
staff ____) total
teachers ____) =training
volunteers ____) time
enrollment ____
follow-up ____
T.V.Station Contacts/arrangements ____
General Servicing ____
Other: (specify) ____

Job Title: ____________________

Total days devoted to Mulligan Stew ____

% of time spent:

distribution ____
administration ____
fund raising ____
publicity or public info. ____
training ____
staff ____) total
teachers ____) =training
volunteers ____) time
enrollment ____
follow-up ____
T.V.Station Contacts/arrangements ____
General Servicing ____
Other: (specify) ____

Donated Services, Donated Items, Third Party Paid-For Items and Services

Clearly many volunteers and community groups/industries have contributed to the planning and distribution of Mulligan Stew. It is critical to document these non-monetized inputs if we are to establish the true costs required to launch such an effort. Thus, in addition to paid personnel costs our second area of major concern will be in-kind contributions.

10. Here is a list of services that you may have received for the Mulligan Stew project. Please check each of these in-kind items that apply to your Mulligan Stew project.

Donated Services	**Yes**	**No**
Teachers	___	___
Principals	___	___
Other Volunteers	___	___
TV Time	___	___
Radio Time	___	___
Newspaper Inches	___	___
Newspaper Ads	___	___
Other: Specify below		

___

___

___

Donated Items	**Yes**	**No**
Use of Equipment	___	___
Use of facilities in bldgs.	___	___
Food samples	___	___
Special foods/meals	___	___
Other: Specify below		

___

___

___

11. P e describe services and items provided to your   gram which were donated or paid for by a   rd party (such as school, national or state ag y) as checked in question 10.

(CHECK ONLY ONE IN EACH BOXED SECTION)

11a: DONATED SERVICES

Service of:

____ Teacher
____ Principals
____ Volunteers
____ State Agency staff
____ Other (specify)
____
____

Source of Service:

____ Agency/Business/School
  ____ public
  ____ private
____ Individual
  ____ public
  ____ private

Payment:

____ Donation
____ Third Party Paid-for

Total
Estimated Value of Service $__________

Description of Service: ____
____

Quantity/Frequency of Service: ________________________________
(hour/week, number of weeks, etc.)

DONATED SERVICES

Service of:

____ Teacher
____ Principals
____ Volunteers
____ State Agency staff
____ Other (specify)
____
____

Source of Service:

____ Agency/Business/School
  ____ public
  ____ private
____ Individual
  ____ public
  ____ private

Payment:

____ Donation
____ Third Party Paid-for

Total
Estimated Value of Service $__________

Description of Service: ____
____

Quantity/Frequency of Service: ________________________________
(hour/week, number of weeks, etc.)

11b. DONATED ITEMS

Type of Items:

____ Equipment

____ Facilities in Bldgs. (for special events)

____ Space in Bldgs.

____ Food supplies

____ Special Meals

____ Other (specify)

____

____ TV time

____ Radio time

____ News.space

____ News.ads

____ Other (specify

____

____

Source of Items:

____ Agency (state or nat'l)

____ Individual

____ Public (school, community group, etc.)

____ Business, private

Payment: ____ Donation

____ Third Party Paid-for

Total Estimated Value of Items: $ ________________

Description of Items: ____

Type of Items:

____ Equipment

____ Facilities in Bldgs. (for special events)

____ Space in Bldgs.

____ Food supplies

____ Special Meals

____ Other (specify)

____

____ TV time

____ Radio time

____ News.space

____ News.ads

____ Other (specify

____

____

Source of Items:

____ Agency (state or nat'l)

____ Individual

____ Public (school, community group, etc.)

____ Business, private

Payment: ____ Donation

____ Third Party Paid-for

Total Estimated Value of Items: $ ________________

Description of Items: ____

12. What donated items and services do you feel were most important? Which of marginal value?

13. For those items and services which you consider most important, would you have been able to purchase those items or services if they had not been available free of charge?

Example: Impossible to purchase the service of the classroom teacher.

Impossible to purchase T.V. time with government funds (Public Service Time).

Findings

Mulligan Stew was enthusiastically described by all staff members at the sites visited. The program was well received by the TV stations, the reports from the teachers were generally positive, and the agents involved felt that they had participated in a successful project.

As compared to other 4-H outreach methods, *Mulligan Stew* reached and signed up large numbers of children as 4-H TV members at an exceedingly low cost per child. This outreach procedure cost Extension less than 80¢ per child in each of the six states; when the federal contribution (18¢ per child) is added, the enrollment cost for *Mulligan Stew* amounts to less than $1.00 per child.

Cost data provided by USDA indicates for other 4-H programs, the average cost *per enrolee* is $24.10. But since each enrolee, on average, participates in 2.3 projects, the cost per enrolee per project is $10.48 (that is, $24.10 ÷ 2.3). Therefore, *Mulligan Stew's* outreach program at less than $1.00 per youth costs only about one-tenth to reach youth. Unfortunately, however, there was little effort to capitalize on this program by attempting to move 4-H TV members into other 4-H projects.

As of October, 1974 the six states reported that between 20% and 90% of all 4th, 5th, and 6th grade children had become 4-H TV members via *Mulligan Stew*. The table below details this finding:

State	Number of 4th, 5th, 6th grade children in State	Number of 4th 5th, 6th grade children reached by Mulligan Stew	% of 4th, 5th, 6th grade children reached by Mulligan Stew*
Arkansas	112,000	103,000	90%
Missouri	270,000	171,000	60%
Oregon	N/A	N/A	-
Pennsylvania	750,000	205,224	30%
Tennessee	147,000	65,000	45%
Texas	687,000	117,000	20%

It would be interesting and appropriate for Extension Service to compare this capture rate with other programs in order to measure relative effectiveness of outreach.

---

*Rounded to nearest 5%

The multiplier effect was clearly operating in this program effort. Some of these effects are as follows:

- More people saw Mulligan Stew and learned about 4-H and Extension than the member's roster indicates. Since the program was beamed into people's homes, it is clear that families who are otherwise unaccounted for have seen the shows.
- There is an improvement in the Extension image. Agents report comments from TV station personnel and the public suggesting that they "didn't know Extension dealt with anything but agriculture."
- New and potentially valuable relations have been established with the educational community and the TV broadcasters.
- The program served as a morale builder for agents, who experienced success and a new sense of professional competence.

On the other hand:

- Little effort was made to move 4-H-TV members into other 4-H projects.
- Promotional activities outside of the schools were, generally non-existent.
- Lead time, particularly between training of the county agents and scheduled start of the program, was frequently very short.
- There was little interface between Mulligan Stew and other EFNEP activities.

A full description of the case studies, including individual reports for each state, is contained in Volume III of this study report.

V CONTENT ANALYSIS

Any product can be improved; Mulligan Stew is no exception. In order to recommend improvement in both substance and format a content analysis of the series was conducted. This analysis was conducted independently of the impact evaluation or the case studies. By arranging for independent review, findings based only on the materials themselves were assured. The potential biasing effects of knowing the results of the evaluation could therefore be avoided.

Accordingly, Abt Associates Inc. arranged for the production values critique to be prepared by Vivian Horner, Ph.D., Director of Research for "The Electric Company", Children's Television Workshop; the nutritional content critique to be prepared by Dr. Johanna Dwyer, D. Sc., Director, Francis Stern Nutrition Center, Tufts - New England Medical Center.

These reports follow:

Production Values

To look at and listen to Mulligan Stew without reference to the explicit messages, but attending only to the production values, is to have the impression that it has been made by someone who read the laundry list of features which are attractive to children and has tried to use them all. Surely much of the look and sound of the series *ought* to be attractive to children: a kid gang to function as heroes, loud rock music often produced by the children themselves; lots of short snappy segments; busy visual field; lots of "on the go" physical activity by the youngsters; ample opportunity for children to one-up adults. In the service of these production values the series offers a great deal: good film footage, e.g., many of the outdoor "on the go" segments, pixiliation and slow motion techniques of the children running, jumping, eating, playing games; some attractive songs; some pleasant and spontaneous interactions. There are a number of things present in the series which look and sound like they ought to work. Unfortunately, however, these good pieces are most often neither integrated with the educational message nor supportive of it.

There appears to be, to begin with, no really clear idea about how to present information to children of the intended age. As a consequence the series is consistently too talky, too preachy, and too babyish in presentation for its target audience. One obvious example of this age mismatch are the puppets. As information communicators the puppets are essentially non-functional and probably disruptive. But, more critical for the overall effect, they give to the show a look of being imatative of Sesame Street. This is not only a bad idea because they are tacky by comparison with the originals they imitate, but because they convey the feeling that the show is too young to its intended audience. Fifth and sixth grade children -- and many third and fourth graders -- are by their own accounts "too old for Sesame Street".

As a whole the soundtrack is also difficult to praise. While individual musical numbers, if they were separated out, might really be effective, the relentlessness of the hard rock music, which never seemed to vary in type, in volume, or in tone, made the soundtrack almost painful to listen to. This, combined with the fact that the Mulligan Stew gang appeared unable to speak below a yell, made the messages intended to be conveyed almost undecipherable (though it is difficult to assess to what extent this unintelligibility was a function of the quality of the kind we viewed).

The animations, while a good idea in the abstract, were not well used in the service of the ideas to be presented. The feeling tone throughout the entire series if frenetic and overwrought, lacking in coherence. Overall, the music and visuals, instead of supporting the explicit messages, end up overwhelming them.

To the extent that the series is entertaining, the entertainment often competes with the educational message. In this regard it is useful to consider Sesame Street which appears to have served as something of a model for Mulligan Stew. What is important about Sesame Street is not how it looks or sounds but the manner in which how it looks and sounds teaches what it sets out to teach. There is probably little question that, especially within the context of a classroom, youngsters will look at Mulligan Stew and possibly even enjoy looking at it. It is probably also true that they will learn something from it. The question is whether they will learn from it what it was intended that they should learn or whether they will have learned something else.

What are the goals of the series? There are a few obvious verbal messages -- "4-4-3-2", "There are four food groups", "You need nutrients to live and grow", "Eat a balanced diet", "It's up to you" -- which are repeated throughout the series. The one learning principle which seems to have been applied systematically is repetition, and doubtless these slogans are learned, by rote. But rote learning is limited in its effect. Is the repetition of slogans the desired outcome? Consider the "Flim Flam Man" segment. Here we learn that it is bad to succumb to simplistic slogans. The children are told to "think for themselves". Yet nothing in the series would really equip the viewing youngsters to withstand a faddist. At best they would be equipped to combat a slogan ("watercress and grapefruit is terrific") with the alternate slogan ("eat a balanced diet"). "Balance", of course, is never really explained, either visually or verbally, except as "4-4-3-2", and nothing is said to suggest that selecting a good diet is any more complicated than having the right number of items from the right number of groups, though as any nutritionist knows, a perfectly appalling diet can be chosen from the four food groups (e.g., four doughnuts, three ice cream bars, four ears of corn, a serving of bacon and two hotdogs); and with 10,000 items in any supermarket, variety is not an automatic guarantee of good nutrition.

Rote learning is not enough. But television is not especially suited to complex verbal learning. What television appears able to do most effectively is model. Therefore, since good nutrition really means good eating behavior, if you wish to improve children's nutrition you must rely on television's capacity to model. In using the capacity of television to model behavior and illustrate process, *Mulligan Stew* is in real trouble. The entire series is riddled with internal contradictions between implicit and explicit messages; that is, explicit messages are frequently contradicted by character, format, music, and every other production vehicle.

Visually the show is not really about nutrition. It is about food. Indeed, if one had to summarize the overall message of the series it would be "Food is great. Eat a lot of different things and you'll be fine." Where food is concerned the predominant visual impression is that one never sits down to meals, that food is something eaten almost exclusively on the fly; while the explicit verbal message (and, one assumes, the intended message) is that meals *as well as* snacks must be included in assessing a balanced diet. Times have obviously changed, and snacking is a part of children's (and adults') lives. Yet considering the narrow range of food choices available to one who eats "on the run", this is hardly a pattern to be encouraged as the *sole source of food*. Yet how would a child learn from this show anything about the normal ways in which meals are planned, the ways in which foods are purchased, prepared and served or the reasons for making certain kinds of choices including price, ease of preparation, availability at various times of the year, and nutritional value? Surely the producers of *Mulligan Stew* do not wish to encourage children to be "on their own" where eating is concerned, considering the fact that the foods most readily available under such circumstances are the very kinds of foods -- ice cream bars, hot dogs, potato chips -- which children do not need to be encouraged to eat. Although the children in the show are sometimes shown eating fruits as a snack, fruits are not readily available to real children, except in their homes. The Mulligan Stew children seem to have no families or homes, and we do not know where they get their food. This "famililessness" is the most dramatic evidence of the tendency throughout the series to show food removed both from its normal selection and preparation, and from its ordinary setting -- namely the family at a meal. The children in this program are free of adult contact, except for Wilbur. Food is most often eaten off paper plates, and the closest thing to a home is a clubhouse. The rare family meal is eaten at the house of someone the children are interviewing ... or, in the case of the racing car driver's wife, lecturing (in a manner offensive to at least one adult ...). Other than the rather confusing and jazzy food preparation that occurs in the segment on ethnic foods, the only food preparation incident that is recollectable is the brief segment in Show 2 where the little Oriental girl makes pancakes which are a notable failure first time around. Her attempt to cook is treated disparagingly by the other children.

The second most dissonant note is Wilbur Doright. He's clearly a fool, and yet we are to believe that it is he who has taught these youngsters everything they know about nutrition. The information meant to be acquired is always either shouted by the children or given in a preachy form by Wilbur Doright (the source of all their information) who is clearly someone to be mocked and laughed at. What is a viewing child to conclude about nutrition information after watching Wilbur? Wilbur's complete lack of charm is most evident in the segment about the Flim Flam Man. This "hippie" type may be seen as a to-be-avoided Devil in some parts of the country. Nevertheless, there is a large portion of the urban United States in which he would be seen as a highly attractive, "with-it", seductive personality as opposed to square and stupid Wilbur Doright. In fact, he is so attractive that the Mulligan Stew gang, faced with his appeals, immediately abandons all the principles which until then they have been trying to teach the audience. So much for good nutrition. The children, as models, are portrayed as fickle, as disloyal (to Mulligan who tries to sustain the lessons he has learned) as almost stupidly gullible, as rude and contemptuous (to Wilbur at almost all times). Yet in the segments which precede and follow this one, we are supposed to believe that these children, along with Wilbur the fool, can tell us what is right to eat.

A few other implicit messages: 1) The series certainly does a useful deed in using black models. The sensitivity to the implicit racial messages was uneven, but always well-intentioned. 2) One of the messages seems to be "eat, eat!" With obesity a U.S. problem one would imagine that simple "eating" need not be encouraged. 3) Finally, there are a number of places where the films are very sexist. Apart from the fact that no girls are ever "heroic", Show 6 is perhaps the worst. Here you have a classic hysterical woman, willing to become the martyr for the problems of her husband: "It's all my fault for making those rich desserts," etc. While it is she who ultimately "solves" the problem, all the attention is focussed on her husband.

Some Specific Comments on Individual Shows

SHOW #1

1. The dominant nutrition message is that if you are poorly nourished, you will be tired; i.e., fatigue is a symptom of poor nutrition. Ergo, if you are not tired, you're eating well. Any one of these messages could be true, or false.
2. In the segment where the children question the citizens about nutrition, the citizens don't know the four food groups. It is nice that children can know something adults don't, but it is stated that they can't be eating right because they don't know the four food groups. As generations of preliterate humans can attest, that simply does not follow logically.
3. Honey and sugar are the first carbohydrates mentioned though neither is necessary to good nutrition, nor are they the most important carbohydrates.

4. Music competes a great deal with the educational messages. It is loud and the words are difficult to understand.

5. Given the way science is taught these days, target youngsters are likely to know that you don't look through a microscope and see "pooped-out cells". In any case, this segment suggests that the difference between a well-nourished and a poorly-nourished individual could be determined by examining their cells microscopically, and that is simply not true.

SHOW #2

1. Drinking something that looks like Kool-Aid, eating off paper plates reinforce the "eat-on-the-run" image.

2. Wilbur as a character attempts a serious treatment of the subject matter, and it turns out to be a joke, because he is an object of scorn.

3. Although they are black, which is laudable, the two fifteen-year-olds hero figures are stereotypes: an athlete and a cheerleader. What is suggested is that if you eat properly, you can be an athlete or a cheerleader. How does this differ from a Cheerios or Sugar Bear commercial, implying that if you eat their product, you'll be a hero?

4. The conflict between the spoken message and the visual images is intense. The foods that are talked about, for example, are usually good; the foods you see being eaten are at best mediocre. A message about good nutrition is followed by a sequence in which Bobby and Alice skip breakfast, gobble a lunch (which is a good one, but goes by so fast you could miss that point) snack at a friend's house. These segments are presented non-judgmentally -- the only problem focussed on is that they have skipped breakfast.

5. In the "implicit message" category, one comes through loud and clear. That is, that children get up, dress and leave for school without families, food is always eaten in cafeterias, snack bars, etc., and is always eaten while doing something else.

6. The digestion animation, as well as being factually incorrect (food never got chewed, and got sprayed with spit as if it were passing through an automatic carwash), is one of the best instances of poorly-targeted information. The level of information is probably well below that which most fourth, fifth and sixth graders already know.

SHOW #3

1. Again in terms of implicit messages, one could learn that a balanced diet is full of foods you don't like (which children already suspect). The Flim-Flam man is able to tempt Mulligan Stew by telling them that these diets contain "none of those foods you don't like."

2. Even if the Flim-Flam man is recognizable as a demonic figure, the nature of what is "evil" is not clear. In detailing the "temptation", the camera pans across a stand selling fresh fruit and vegetable juices, across counters filled with dried legumes and whole grain flours, as if these nutritious foods were part of the evil.

3. Faced with the lure of instant nutrition, the children of Mulligan Stew instantly abandon all they have learned and have been trying to teach the child audience and turn on Mulligan and Wilbur. The self-righteous defense of 4-4-3-3 by Mulligan and Wilbur does not do much to enhance their credibility, either. The children are won back from being "faddists", not by any logic, information or even appropriate slogans, but by magic. Wilbur suddenly becomes a strong man and the otherwise healthy looking Flim-Flam man suddenly becomes a 90 pound weakling. If it happens that good nutrition does not necessarily make you into the best athlete or the most popular cheerleader, or from a bumbling idiot into the Olympic decathalon champion, then what use does it have?

SHOW #4

1. The idea that you can get a balanced diet no matter where you live is a good one. In addition, this segment also contains one of the few "real meals" in the whole series, when the children sit down at a farm table. Food is presented here as part of being together, for the holidays, etc., but its message is not reinforced by the rest of the series.

2. The message that you can eat a balanced diet no matter which ethnic variety you choose from is fine, but it presupposes that you know the ingredients and hence, the nutritional contribution of each of the foods you choose. Nothing in the series has prepared you to make that judgment, and very little information is included in this show to help. The one segment which came close to teaching -- the comparison between egg rolls, pizza, tacos, and crepes -- dropped the lesson with a crash and let Wilbur sow confusion immediately afterward.

3. For all the obvious attractiveness of the shopping, the talks with various ethnic food specialists, etc., one does not have the feeling a child would come away with a) any idea what went into that dish; or b) what ingredients distinguished the cuisine of that country.

4. The pixilated shopping trip and the rock song lauding foods by name ultimately results in little more than exotic visual impressions and a list of equally exotic words. It isn't likely that a child would even know to which food group kimchi or mongu belonged.

5. The transition from the pigs eating each other's tails to a meal containing roast pork was singularly tasteless.

6. This was the one show which had the potential to do what its title suggested: "get it all together". It went from the farm -- the source of food -- through shopping, through various kitchens, to the children themselves cooking, and finally, to

the table. Yet the overall impression is a jumble, rather than a coherent tying together of all the fragments acquired thus far.

7. This particular show steps dangerously close to ethnic clichés. It smacks of the National Geographic's "quaint peasants" approach. The foreign students in their "native" costumes lends interest, but any watcher of news programs knows these are not the normal "native dress" of any of them. On the more local level, clearly chitterlings are most appropriately dealt with as "soul food." On the other hand, the person delivering the message doesn't have to roll his eyes and lick his chops when he talks about them. Similarly, one can expound the virtues of lasagna or bagels and lox without an accompanying ethnic accent.

8. One might observe, particularly in the context of this sequence, that the abundance of food in the world which this "smorgasbord" implies, is in direct contradiction to the growing problem of world food supply which the next show tries to deal with.

SHOW #5

1. Just as the fourth show appears to gloss over the realities of the world food situation, so this segment seems particularly out of touch with the same realities. The astronaut mentions in passing that we'll soon have to double our food production to meet the needs of a growing population. The overall impression one gets is that the problem really isn't that serious and that science will find a way. The space program is not, in fact, designed to solve all the problems of feeding the world, nor have we any indication that any other science has a solution in sight. We have not moved far toward "farming the seas", a solution blandly suggested by the diver toward the end of the sequence.

2. Although the effective message had little to do with nutrition, the segment in the space laboratory was among the most soundly "educational" segments in the series. It managed to present individual facts about foods and their preparation, making clear the relevant conditions - life sustenance, space, weight, recycling, etc. -- the constraints that led "space food" to have the particular qualities which it has. This kind of element-process-relationship model is precisely what is missing from the rest of the series. Had this segment served as a pedagogical model, the series would have been much stronger, educationally.

3. A good example of how the format undercuts educational effectiveness is this: having taught a lesson about why space food is engineered as it is, that lesson is immediately obstured by implying that space food is useful because it is lightweight and pre-prepared and perfect for people who aren't too perfect -- namely, Wilbur.

4. Again, Wilbur's credibility as a source of food information is open to question. Here is Wilbur, who presumably knows all about food, stuck in the woods with a problem on his hands. First, there is no suggestion that food can be found anywhere except a grocery store (Euell Gibbon notwithstanding). Second, he does not seem to realize that with three days worth of food, death is not imminent within the first 24 hours.

5. The final scene, with the "Food for Tomorrow" song and everyone playing on the beach, reinforces the technological message that science will find a way (as we ride off into the sunset), but presents totally irrelevant visuals, which engage the eye but disengage the brain from the intended nutritional message.

SHOW #6

1. The sixth program is distinguished from the others in that it has a somewhat less far-fetched plot, and is somewhat easier to follow throughout. It uses modeling with more sophistication. It's more coherent, has more internal integration, mainly because the plot deals with food and its effect on the body, thus reinforcing the individual segments.

2. Admittedly, an Indy 500 driver is very attractive to youngsters. However, it might have been more credible to feature a jockey rather than a race car driver. The functional relationship of weight to performance is more obvious for a jockey.

3. In this show, as in others, one notes in the children a special delight over desserts, and a glum, pedantic response to "food". Here we have a group of children knowledgeable about nutrition, *yet* they show all their enthusiasm for gooey desserts, banana cream pie, ice cream.

4. The major message of this show is, "It's all up to you". Yet it is the *wife* who reforms, and in doing so solves the husband's weight problem. The Mulligan Stew gang do not appear to have parents. Who is going to help them gain control over their food intake?

Recommendations

None of these criticisms are intended to say that the series is all bad. It has some excellent features. But it has many others, which are not only bad, but work to defeat the purpose of the show. One can only ask, "If I had six half-hours of television time to teach youngsters the most important things they need to know about nutrition, how could I best use that time?" In the context of this question, *Mulligan Stew* could have done so much more, so much more effectively. As it is, its main value is probably in "consciousness raising" about the importance of nutrition. My overall impression of the series is one of form unrelated to substance. *Mulligan Stew* lacks clearly defined, operationalized learning goals, a "learning theory" of some kind to guide their presentation, and at least minimal formative research to insure that what youngsters learn from the segments, individually and collectively, is related to the intended outcomes.

If there is one thing we have learned at the Workshop, it is the importance of doing evaluative research prior to, and during, production, not simply after the fact, and of feeding the results back into the production process to insure the integration of educational intent with effective entertainment. If you don't insure this kind of research-production interaction, you must be very lucky indeed to end up with a product which is not an educational hodge-podge, however effective it may be in engaging the attention of its audience. Resultant learning is likely to be scant and uneven, where it might have been substantial and predictable.

Nutrition Content Analysis

This series of six 28-minute films introduces the concept of grouping foods by nutrients in order to insure that primary school children understand the principles of adequate diet. Since the fact that foods contain nutrients is not inherently obvious, it is necessary to spend a good deal of time showing that foods are composed of many different chemicals, some of which are required by the body.

Food sources rich in the major nutrients are illustrated. Groups of foods which are more or less similar in nutrient content are shown. Suggestions for the numbers of servings of these groups of foods to meet nutrient needs for children of this age are given, and dietary patterns meeting and failing to meet these formulae are illustrated. Also touched upon rather lightly is the fact that the need for food is actually the need for nutrients, and that the nutritive value of the foods can be increased or decreased by means of various processing techniques. The concept of a 'balanced diet' as one that provides the recommended number of servings from the Basic Four Food Groups, with neither an excess nor an insufficiency of calories, is stressed.

In summary, all of the concepts listed by the Interdepartmental Committee on Nutrition of the Federal Government as being essential to nutrition education are mentioned, although some concepts receive more attention than others.

Although nutrition information is conveyed by these films, one could take issue with the relative emphasis given, the sequence and order of presentation of concepts, and the stress on food groups which might lead to misconceptions among some children.

It was apparently hoped that children might learn from these films that foods contain nutrients of varying kinds and amounts; that foods similar in these respects could be grouped together; and that by including a certain number of each of these groups, the nutrient needs of the body could be met. There is the possibility, however, that children will fail to realize that their physiological needs are for nutrients, and not for specific food groups.

Since nutrient labeling has recently come to the fore, however, consumer education with respect to foods demands an understanding of nutrients and nutrient density. While these concepts are sophisticated and better suited, perhaps, for older children, mass media materials dealing with these topics will soon be needed on a large scale. The Department would be wise to consider this need in planning for the future.

Many concepts introduced in the films were not properly clarified. For example, it was not explained how one would classify and count nutrients in various combination foods (pizza, stew, a hamburger with lettuce, tomato and a roll, etc.), which the films seem to suggest can be double-counted (as combining several food groups), nor how to classify foods favored by certain ethnic groups. The notion that the calorie-providing of all foods must be ascertained is not clearly stressed, nor is the fact that some foods are not included in the Basic Four because they contribute relatively little to nutrient needs.

The health effects depicted in the film are somewhat overdramatized, with the situations leading to health deficiencies and the behavior which results from poor diet being overdrawn. For example, while extreme lethargy or fatigue might indeed be a sign of malnutrition, stemming from extreme caloric deprivation, to depict an entire town suffering from narcolepsy is to overdo the point. It is hoped that such an exaggeration will be understood and taken tongue-in-cheek even by seven-year olds, who already know by empirical evidence that not eating breakfast is not likely to have such a dramatic effect.

The portion of the films dealing with food additives is limited to those which are added intentionally. Those additives involved in the preservation, enrichment, and fortification of nutrients are emphasized. Those which are added unintentionally, or for purely cosmetic purposes, are not mentioned. Nor are the disadvantages associated with some of the latter discussed.

Although the films do address minority group children with different food habits, specifying that the Basic Four food groups can be adapted to their eating habits, teachers of such children must be prepared to interpret the message of the film, relating it to the foods these children actually eat.

Several types of auxiliary materials accompanied or were available to the teacher and children. These included member's manuals (comic books), teachers' guides, posters, pins, certificates, records and sheet music.

While the comic book reinforces the slogans and messages in the film, it rarely introduces additional explanations or facts. It is generally entertaining.

The films and comics undoubtedly served to motivate the children. Some important facts and explanations appear to be omitted, however. Presumably, the teacher would be expected to elucidate and explain these points. If so, it would be assumed that the teacher's guide would serve as a handbook, explaining these points to the teacher and suggesting ways for her to get these points across to the class. This, unfortunately, did not prove to be the case.

The teacher's guide needs revision and strengthening. As it stands, it is lacking in factual content, does little to stimulate creative teaching, and offers insufficient information on how to acquire additional materials. Further, the suggestions offered for additional activities to supplement the series are not particularly dynamic. And while it is obvious that teachers are able to understand more sophisticated explanations of the various points made in the films and comics, no elaboration or additional explanations are provided in the guides.

In short, the guide assumes that the teacher-leader-aide already has a good store of knowledge of nutrition. This may be a false assumption. Therefore, much more factual material about nutrition should have been included, along with methods for making it attractive to the various target groups. There should also be references to additional sources of information as well as special activities for children of ethnic, geographical, or other groupings who eat differently from the norm.

While it is recognized that films and comics may motivate, they do not necessarily provide the best means for making fine points. Where they sometimes appeared to be lacking was in their ability to supply a carryover into real life. Therefore, in addition to greater factual content, an emphasis on life-related experiences and activities should be provided by the teacher's guide. The guide should offer activities specifically designed to help the children apply the facts to their daily lives.

This lack of additional information to provide a deeper understanding of the subject matter, and the lack of activities geared to making the material applicable to real life, were considered the major deficiencies in the total package. It was felt, therefore, that each unit should be evaluated separately, with suggestions as to how the objectives might still be met in a relatively inexpensive manner. Accordingly, each of the six units is discussed in the section which follows.

Summary Comments on the Specific Package Units, with Suggestions for Improvements

Unit I: *The Great Nutrition Turn On*

Film. It is possible that after seeing this film many of the children will conclude that one thing which can happen as a result of poor nutrition is that the persons affected will fall asleep at odd times and places. Since they themselves do not do this, they may conclude that they are well-nourished. While the children may, after viewing the films, be familiar with the four food groups, it is unlikely that they will know the number of servings connected with each group, since the connections between the 4-4-3-2 message and the food group message are not made strongly enough.

Comic Book. Turning to the comic book and teacher's guide, which could be used to reinforce these points once the motivation and stimulation were supplied by the film, we find the 4-4-3-2 food group connection is in fact stressed several times. Little emphasis is given, however, to exactly what a serving size is. In fact, in the cheeseburger example the viewer gets the impression that a piece of lettuce and a slice of tomato probably constitute a serving. This serving size concept is not an easy one to grasp, but it is essential to the practice of the concept behind the Basic Four. Unfortunately, the food guide which actually defines a serving is not incorporated into the comic strips, but is presented as a separate chart, which may tend to be overlooked.

Teacher's Guide. In the teacher's guide the questions again emphasize the sleep theme, but no answers to these questions are supplied to the teacher. The guide might have incorporated qualifications and explanations and provided the teacher with material to augment the points made in the film. For example, there are a few questions to reinforce the 4-4-3-2 approach, but no emphasis on serving sizes or of the size servings of the various components of each of these groups.

The most serious omission in this unit is that it does not tell the children how *all the other* foods that they eat, which are not in the basic four, fit in. Some of these foods are composite, as in the cheeseburger-deluxe example, but no ethnic foods, and very few other 'combination dishes' which fit into the basic four pattern to a greater or lesser degree, are dealt with. Moreover, the viewer is not told that all other foods don't fit in, or why they don't fit. These other foods are just ignored.

The word scramble game is of questionable utility, although it may be useful in spelling class. The nutrition bee is a good activity, but since common non-correct answers are not supplied, the teacher who doesn't fully understand the idea may not use it. The Nutrition Mission is good; it is at least peripherally related to the children's lives. Again, correct answers should be supplied. Also, this activity could be adapted for ethnic groups by including a few pertinent examples. While Malnourished Mary is very dramatic as far as the diet goes, the signs and symptoms are a bit overdramatic. Again, the correct answers and the reasons, or theoretic reasons, for the difficulties she experiences should be given to the teacher. But since the signs and symptoms are a bit overdrawn anyway, perhaps the example might best be dropped.

In choosing examples from the vast range of foods that children like, it is ironic that this unit includes the no-bake cookie. This example of "good" cookies, which are later (in unit 6) contrasted to "bad" cookies full of empty calories, is extremely confusing.

The list of suggested materials and sources could have been strengthened. Since most teachers are not given formal training in nutrition education, they will not be likely to have additional sources to suggest to the children. There are many organizations which will send free books or pamphlets upon request and, given the enthusiasm with which children receive mail, it is unfortunate that these potential sources were not included.

The materials in this unit devote insufficient time to elaborating and strengthening the slogan about needing nutrients to live and grow, or explaining what the various nutrients do. Conversely, too much time is spent on the fatigue factor. There is also little emphasis on good health, or lack of hunger, which are associated with good nutrition. Further, as has been mentioned, there is a definite failure to explain serving sizes, and material in the comic book and no-bake cookie section confuse things, since, although the basic four is shown, the contributions do not always constitute servings -- as in the case of the cookies and the cheeseburger.

The guide and comic book are strong on telling information, but weak on teaching and reinforcing behavior. If the packages are to continue to be used widely in classrooms, the teaching elements should be utilized to a greater degree. Examples from the school lunch program, or a field trip to a feeding center for the elderly might be included to help children relate to the concepts in real life situations. Many schools have films on food, and these might also be used. And home-based or family-based activities might be included.

To really teach the children and get them to apply the concepts in the package, additional teacher support materials are needed. As it stands now, probably very few teachers will take the time to go beyond the "telling" activities which are emphasized in this package, and very little effort will be made to relate the information to the children's daily lives.

Unit II Look Inside Yourself

Film. The purpose of the film part of this unit, apparently, is to stress the importance of eating breakfast and to emphasize the extreme fatigue which will plague those who do not. The process of digestion is introduced, and the previously introduced concept of the four food groups is examined, as is the concept of daily servings. There are considerable discontinuities between the various themes in this film, however. The eating habits depicted in the visuals are less desirable than those discussed in the audio portion, for example. And the social situations in which eating is portrayed leave something to be desired; children are never shown in a family situation, although most children spend much of their eating time within the family group.

The process of digestion is well handled, but what happens to the nutrients after they are assimilated is not sufficiently explored. There is an overly-strong emphasis on breakfast, and a corresponding lack of emphasis on the fact that the total daily intake is important in determining nutritional status. Moreover, the effects of not eating breakfast are overdrawn; this one-cause explanation of malnutrition is not borne out by scientific evidence.

Comic Book. The comic book section for Unit II has a weekly food chart which is behaviorally oriented, encouraging children to record their daily intakes in terms of the various food groups. It also picks up and reiterates the digestion theme, and the functions of nutrients are described again. The no-bake cookies, while they are not a bad example, may serve to confuse the child, since most cookies are not included in the four food groups.

Teacher's Guide

The teacher's guide encourages spillback from the movie, rather than taking the concepts presented in the movie a step or two further. For example, there is no explanation of why time of eating may be important. Nor is the teacher given additional information to help her build up her nutritional expertise so that she might be more effective in offering suggestions during the talk and show sessions. The teachers, presumably, are skilled in communicating ideas to children, but the guide does not capitalize on this aspect of their expertise.

With respect to the group activities, the digestion drag track game enforces the digestion theme, but the breakfast poster idea is busy work which does not reinforce the servings message or the basic four message. The shadow poster does not relate to the ideas stressed in the film; moreover, it is difficult to understand. The quick breakfast activity, on the other hand, is imaginative and sensible. An emphasis on food safety might also be included here. The starch to sugar experiment, also, is imaginative, but no teacher backup materials are provided; many teachers may be unable to explain the process to the children.

The unit questions call for little more than parrot responses. More behavior-oriented questions might have been included. The reference list is weak. Perhaps this unit might be strengthened with the inclusion of such activities as visits to school breakfast programs or snack programs and discussions of why children sometimes skip breakfast.

The Flim Flam Man

Films. In this film there is an overemphasis on the negative aspects of most fad diets. It is curious, though, that only the more esoteric "spiritual" and weight reduction diets are mentioned, and little attention is paid to such issues as the overuse of vitamin pills or unsound diets for athletes, etc. Children of the viewing age specified for this film rarely engage in any of these types of diets of their own volition. One wonders, therefore, how much of this message will sink in. Moreover, the objections to such diets are not stated clearly enough so that parents on such regimes, should they watch the film, would get the message.

By the end of the film, the viewer is expected to be able to define a fad diet, but this definition is not clearly presented in the film. It often appears, in fact, that a fad diet is anything which isn't what Wilbur says. Further, there is little attention given to the time dimensions involved; for example, one day on a Zen diet will not do any harm to anyone, but fifty days is another story.

The most constructive task for which the film prepares the viewer is the planning of a good diet using the 4-4-3-2 servings and food groups. Here again, however, portion sizes are ignored and no emphasis is placed on the different or exchangeable members of the various food groups. There is also no mention of the non-Basic Four foods that every child eats, nor how to classify them. It is unlikely, then, that he will be able to carry out this planning task realistically.

The film also played up the sinister elements of diets and deemphasized the obviously silly elements. Examples of fad, or silly, diets might have been drawn from the humorous weight reduction regimes of mothers or older sisters; or the viewers might also have identified with the unsound athletic training diets of an older brother figure, who might resemble an older brother in their own families. While such opportunities were overlooked, the film itself was fast moving, with a plot that was more tightly woven than those of the previous films.

Comic Book. The comic book emphasizes the occult nature of some fad diets, as well as their "easy solution" appeal. It also reexamines the nutrient quality of foods and the four food groups. It presents additives only as extra nutrients or preservatives, however, and overlooks their use for cosmetic purposes. The bread experiment is a useful example of the positive aspects of food additives. There is an inconsistency in this particular unit, however, for in other units the concept of duality ("good" cookies which fit into the Basic Four versus "bad" cookies which contribute little but calories) is presented, while in this presentation of the use of additives only the positive aspects are stressed, with no mention of the unnecessary, purely cosmetic uses to which additives are put.

Guide. Again, the teacher's guide presents no additional materials or explanations to enrich the teacher's store of knowledge. The group activities do not take advantage of readily available materials: nutrient labeling has been in effect for quite some time, and additives have long been identified on food containers, yet there are no activities involving cans and boxes the children might bring from home. The food additive puzzle serves to elaborate on the uses of additives, but neither the teacher nor the student is provided with sufficient examples of the various additives and their different purposes. It should not be assumed that the functions of the various chemicals added to food are commonly known; a simple list of these should have been included in this unit.

The exercise dealing with fighting fad diets does not explicitly present the possible correct answers to the teacher. Further, while the Mulligan Stew activity is a good one, less emphasis is given to it in the text and supporting materials than the no-bake cookies activity, and therefore it may not be widely used. The bread experiment leaves the teacher with little more knowledge than the student; a description of the additive and how it acted in the bread should have been supplied. Other examples of additives, such as orange coloring to oranges, yellow-dyed oleo fortified with vitamin A, iron-enriched baby foods, or non-dairy whipped cream with additives to enable it to keep its shape, might have been suggested. Further, there were no examples given of how nutrients may be changed by heating or other processing. Nor was there mention of condiments as an additive to improve the flavor of foods. Although these concepts are dealt with in later units, they might have been touched upon in this section as well.

Unit IV

Getting It All Together

Film. The film concentrates too heavily on the international influences of ethnic foods and not heavily enough on an analysis of the various ethnic foods actually eaten in this country. This film might have made the Puerto Rican child, the Chicano child, the Amerindian child, and others, feel real pride in their special foods and food habits. Instead, the film discusses foods from other countries and leaves the viewer with the impression that people who eat differently are foreign. Rather, the film should have made clear, there are Americans who eat a variety of different foods because these taste good to them, and that these foods can incorporate the elements of a balanced diet.

The message of the film, as stated in the teacher's guide, is that all nutrients essential to a balanced diet can be found in foods from all over the world. The film also implies that foods eaten all over the world are composed of nutrients. While these are certainly useful concepts, it is not necessary to spend a half hour on them. Moreover, the special foods depicted are not always classified into the food groups they represent. The objective then, of having children apply what they have learned to their own diets is not well presented.

Comic Book. The cartoon book takes the viewer to Japan, Italy and Sweden, where various examples of the Basic Four are found. The child is further drilled on the four food groups, the number of daily servings from each group, and the five nutrients of a balanced diet. The message might have been more effective if countries such as China, Mexico, and Puerto Rico were included, since families from these countries have emigrated to the United States in comparatively recent times (the last twenty to thirty years) and still may have children in the target age group who observe different eating habits.

The Pat-A-Pizza recipe is an example of counterproductive teaching: one would have to eat a great deal of this pizza before it furnished a serving from each of the four food groups. Servings and portion size are not discussed, with the result that confusion would be bound to arise in daily application.

Teacher's Guide. The guide, again, asks questions of the children that the teacher may not be able to answer correctly. For example: what nutrients are in these foods? The other questions make useful points regarding the universality of nutrients, but here again no examples, answers or explanations are given. Also, while some of the questions begin to deal with ethnic American eating patterns in a positive way, the subject is not pursued sufficiently.

The group activities, such as a visit by a foreign guest, are quite imaginative. The concept which the visitor is asked to emphasize, however, avoids the obvious one: showing how many of the foods he eats can be included in the Basic Four. It is also unfortunate that Americans who are foreign born and eat foods typical of their native countries are not included.

The activities dealing with foods of the state and state lunches are less important, but interesting. But the puppet show seems irrelevant. A visit to a food production processing, or marketing place might have been included as a more creative activity. Even a visit to the back room of a supermarket would have been interesting; the crates show the diversity of our food supply, the way foods are packed, and the methods used to preserve them. Such activities would have demonstrated the concept of "getting things all together" from a variety of sources and ethnic influences, all of which have a bearing on this country's food and eating habits.

Unit V

Count Down: 4-4-3-2

Film. The plot of the film is hard to follow. Presumably, it is designed to expose the children to new kinds of foods being made, a message which they probably do understand, and to show how they are being made more nutritious, a message which does not come through. In fact, the latter message may not even be true in the case of many new foods.

New kinds of packages designed for the space flight program are shown, but pass before the camera too quickly, while processed foods and brand names are conspicuously displayed. The reasons for drying foods, and other processes for postponing spoilage, are not emphasized sufficiently; the children are not likely to connect the processing techniques with the preservation of nutrients, since the point is not forcefully made. Further, these points are not tied to the balanced diet concept, and there is no attempt made to show how the processing of foods and the conservation of nutrients achieve that end.

Comic Book. The comic book cartoons repeat the number of servings required, but do not give examples of what individual foods or combinations of foods constitute a serving. The device of shooting Wilbur aloft demonstrates well the difference between man's nutrient needs and those of other animals. The activity involving having the children decide what to send up in the rocket is good, except that the constraints necessary, with respect to weight and size, are not clearly stated, and many children may miss the point.

The dried foods experiment is interesting, and useful, since it is a real life example. The fact that a prune is a dried plum may not be apparent to many children, and this fact might be mentioned by teachers as an example of how processing may change and preserve foods.

Teacher's Guide. The guide presents a student-teacher question period. Again, the teachers may not know all of the correct answers. Explanations and more facts should have been included. For example, the fact that new foods contain similar nutrients to old foods is not made clear. Nor is the fact brought out that even astronauts need all the nutrients.

The first group activity is extremely useful and relevant. The children are taught to read labels and to compare different types of orange drinks. Unfortunately, the teacher is supplied with little factual backup material, and may decide not to pursue this activity for that reason.

The restoration of dried foods and the field trip to a fish store are valuable activities. It would be advantageous to also include a visit to a dairy or a place where poultry or animal husbandry is undertaken since many urban children viewing this film may not know what the common animals used for food production in this country look like. While 4-H youth, of course, will know all about these matters , it would be useful to include activities which show what happens to food-producing animals during off-farm processing. Even farm children may not know, for instance, how dried milk, dried beef, frozen chicken, or dried peas are produced, or how such items as lettuce are shipped.

The questions in the guide deal with balanced diet, but the fact that this means the 4-4-3-2 system, with the Basic Four, plus adequate amounts of energy-providing foods, is not sufficiently emphasized.

Unit VI

The Racer That Lost His Edge

Film. Although this film is better structured than the previous one, it overemphasizes the point that filling up on goodies is bad without also making the point sufficiently clear that even people who eat the 4-4-3-2 way, and include all of the Basic Four, can be fat if they do not pay attention to the other foods they eat or the sizes of the servings they select. The film leaves the viewer with the impression that only those who do not eat the 4-4-3-2 way will become fat. In addition, the health aspects of the film are a bit overdrawn, and physical activity is underemphasized. But basically, the film does not clearly make the point that all foods, Basic Four or not, provide calories, and that one can have too many as well as too few, even if they are chosen from the Basic Four. Since the previous films did not deal with the portion size question, and the point was never made that non-Basic Four foods provide calories, it is difficult to introduce these ideas at this juncture and emphasize them sufficiently. Obesity, which is very much related to excess energy intakes, is probably the most common nutrition-related problem in the United States today. As such, it deserves more attention and better treatment than it receives in this film.

Comic Book. The comic book continues to place foods into groups and introduces peanut butter as a non-animal food member of the meat group. The idea of balancing calories and 4-4-3-2 is well stated in the strip, but the message is not elaborated upon. The slogan"4-4-3-2, balancing calories is important, too" is catchy, but this message, too, is not backed up by the movie.

In this unit it is doubtful that the main message, the energy balance concept, truly gets across. It is lost within a confusing series of other messages. Energy balance is just as important for nutritional well-being as as is the Basic Four, yet the concept of energy balance is not an easy one to grasp. This unit and the teacher's guide need extensive revision to make this concept clear.

Conclusions and Recommendations*

Conclusions

The Mulligan Stew television series has had a strong impact on its target audience. This audience (fourth, fifth and sixth grade children) liked the show,[1] learned from it and in some cases changed their reported behavior after seeing it.[2] When all measures of impact are considered, these positive effects were greater among fourth and fifth graders than among sixth graders.[3]

Extension Service created a comic/workbook for children which can be used with the series. This comic book was rated very highly by the teachers, particularly in the area of pupil interest.[4] It was found that children who received the comic books exhibited greater positive effects than those who did not.[5]

The series can be shown in school or be seen at home. When it is seen in school, more of the shows are viewed by both children and teachers than when it is seen at home.[6] The positive effects of seeing it at school are stronger than those of seeing it at home.[7] The effect is about equal in strengh to that of the comic book. However, more parents watch it when their children see it with them at home than when the children see it separately at school.[8]

Children who view the show in school and also have the comic/workbook exhibit the greatest positive effects.[9] Least effects are recorded among children who view the series at home and do not have the comic book.[10]

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*In the interest of presenting a clear and uncluttered synthesis of the conclusions and recommendations arrived at, all specific numerical data and other information to support the statements contained in this section are footnoted. Material to which the footnotes refer is presented at the end of this section.

The areas in which impact was demonstrated for all grades of the target audience were:

Nutrition knowledge: an increase in number correct on the nutrition knowledge test was registered.[11]

"Junk" food selection: the proportion of selected foods that were non-nutritious was reduced.[12]

Awareness of 4-H: an increase in number of children who had heard of 4-H was observed.[13]

Frequently, programs will impact on the better student but show no effect on the poorer students. As measured by reading ability, both good students and poorer students showed significant gains in knowledge about nutrition.[14]

Mixed effects were obtained on other variables. When the seven nutrition-related activities measured in this study were combined into a single index, impact was demonstrated for fourth and fifth grade subjects only.[15] When the index is decomposed, several items show these increased activities in items "Tried any new foods", "Fixed any meals" and "Prepared food with a friend".[16] Similarly when breakfast eating behavior is measured, fourth and fifth grade children show improved performance.[17] On the other hand there appeared to be no improvement in 4-4-3-2- food selection behavior.[18] Finally control and experimental groups both show gains on learning from peers; only the fourth graders show gains greater than the experimental group.[19]

Teachers rated the shows highest for "The program as a nutrition-education resource in general" and lowest for "How much this show helped develop better nutrition behavior among your pupils".[20] These opinions appear to be validated by the impact findings above.

Mulligan Stew was subjected to a content analysis to explore areas where improvement is indicated in either the production techniques or the information conveyed. The major conclusions reached were as follows:

Attention sustaining devices (e.g., rock music, kid gang, whimsy, slow motion) - are neither integrated with the educational message nor supportive of it. There is a frequent mismatch between target audience's age and techniques of presenting information (e.g., use of puppets). The sound track is poor, and music and visuals tend to overpower the message.

Models presented create dissonance. This is particularly apparent in the modeling of Wilbur Doright, for on the one hand Wilbur is presented as the authority figure that knows everything about nutrition; on the other, Wilbur is constantly the object of ridicule by the Mulligan Stew gang. Such contradictions are probably counterproductive to the objectives of the series.

The series often presents a weak model of eating behavior. Where food is concerned, the predominant visual impression is that one rarely sits down for meals. Yet considering the narrow range of food available to one who eats "on the run", this is hardly a pattern to be encouraged.

Still another problem in the modeling of the series is that the Mulligan Stew gang seem to have no families or homes and we do not know where they get their food. This "famililessness" is the most dramatic evidence of the tendency throughout the series to show food removed both from its normal selection and preparation, and from its usual setting -- namely, the family at a meal.

A last area of information, the delivery of the program by and the costs to state Extension, leads to the following conclusions:

At an exceedingly low cost per child, large numbers of children were reached and signed up as 4-H TV members. As of October, 1974, the six states reported that between 20% and 90% of all 4th, 5th, and 6th grade children had become 4-H TV members via Mulligan Stew. This outreach procedure cost less than $1.00 per youth in any of the six states (including the federal contribution) compared with an estimated cost of $10.48 per member for other 4-H programs.

The multiplier effect was clearly operating in this program effort. Some of these effects are as follows:

- More people saw Mulligan Stew and learned about 4-H and Extension than the member's roster indicates. Since the program was beamed into people's homes it is clear that families who are unaccounted for have seen the shows.
- There is an improvement in the Extension image. Agents report comments from TV stations and the public suggesting that they "didn't know Extension was anything but agriculture".
- New and potentially valuable relations have been established with the educational community and the TV broadcasters.
- The program served as a morale builder for agents who experienced success and a new sense of professional competence.

Recommendations

The purpose of any evaluation is two-fold. Firstly it supplies needed information for accountability. Secondly, it contributes toward policy decisions, e.g., the establishment of program priorities. It is unfortunate that the information on Mulligan Stew cannot be compared with information on other programs in Extension Service to allow priorities to be established on the basis of current data. There appears to be a paucity of other studies within Extension Service to which to relate these findings. We strongly urge the expansion of evaluation activities into other program components of Extension Service.

Educational objectives and organizational objectives set for Mulligan Stew appear to have been far too optimistic when one considers that the series consists of only three hours of shows. Human nature and behavior is not easily changed, and to expect substantial changes in people's habits on the basis of a few hours of TV viewing seems to be unrealistic. We recommend that program goals and objectives be developed that better reflect the potential of the instrument created to achieve them.

Given the cost effectiveness of the Mulligan Stew series, the impact of the program on the children who viewed it, and the interest engendered in further programming, we recommend that TV programs continue to be used as one of the Extension Service's program components.

Should TV programming continue, a number of recommendations are in order. These concern the research and development components, and the distribution component.

Research and Development (R&D). In order to ensure high quality in future R&D efforts, the following steps must be taken:

- Select future subject areas for TV programming that satisfy at least two criteria, first that the subject be of interest to both teachers and children; second that there be a paucity of high quality curriculum materials currently in use in the schools.
- Develop reasonable, realizable goals and objectives for the program.
- Operationalize these goals to a degree of specificity that makes for easy translation to the media, and which permit easy evaluation of the program.
- Develop auxiliary materials which both reinforce and expand on the message of the shows. Learning by doing activities should be emphasized. These activities should provide feedback on performance.
- Use an R&D staff organization which includes a curriculum specialist, a subject specialist, and a TV production/film specialist. The interface between curriculum and production specialists is essential.
- Engage in formative evaluation, that is, testing the production on the target audience at all phases of the conceptualization and production. Feedback at all stages in the series development will improve all the shows as well as those later in the series.

Distribution Component. Within a framework of limited resources, Mulligan Stew is most productively used in group situations. The group situation used in this study, i.e., schools, is not the only type of structure situation possible. Indeed Mulligan Stew can easily lend itself to a week-long nutrition camp or be a six week segment of a 4-H club or special interest group. However, the number of children reachable through the schools is so great that this would appear to be the preferred approach although any other structural viewing situation can also be used. We recommend then that any future Tv programming should continue to focus on the schools as its primary delivery mechanism. There must be a close working relationship between those staff who are arranging TV placement and those who are responsible for school contact and delivery of materials. The success of Mulligan Stew in any site depends on the interaction between TV schedules and school schedules.

Lead time must be sufficient both for placement of the program and training of Extension staff. Lead time between training of Extension staff and airing of the program should be not less than two months or more than five months.

The target audience may have been too broad in the Mulligan Stew effort. While some impacts were evident in the sixth grade, focusing on fourth and fifth grade children would be more cost-effective. Another reason to focus on fourth and fifth grade children is that they have more years ahead of them when they can be 4-H members.

There was little evidence of promotional activities outside of the schools. This is a lost opportunity to carry the message of the program and thereby Extension to a larger audience. In future programming, promotion should be part of the planned activities.

Other follow-up activities should include moving 4-H-TV members into other 4-H projects. While the shows were excellent promotional as well as educational devices, their outreach potential has not been fully realized. Follow-up activities should be part of the overall planning.

A Final Note

In the past, Extension Service has subscribed to the ideal of defining in advance the specific objectives of a proposed program. Such objectives, arrived at by consensus, are very useful in identifying the limits and defining the parameters of a program. Used after the fact, as an evaluation tool, these objectives then become the criteria upon which to base a judgment as to the success of the program. The achievement of these objectives within a specified time frame constitutes "success".

The Mulligan Stew program, on the other hand, was defined in terms of generalized goals, rather than specific objectives. These goals, however, could not be automatically translated into operationalizable objectives. Thus it becomes more difficult to evaluate the success of the program in terms of any organized criteria. By recommending that TV programming of the series continue, however, Abt Associates is in fact indicating that criteria have been identified by which the success of the program may be measured. These are:

- The impact of the series: positive changes in knowledge, awareness and selected behaviors in subjects who saw the program as compared with subjects who did not.
- Cost factors: the lower cost per child for the Mulligan Stew package compared with the cost per child for other 4-H programs
- The continued interest expressed by state 4-H staff, teachers, principals, and TV stations in additional 4-H TV programming.

Even though these criteria were arrived at after the fact, they would appear to be appropriate, and the data acquired by Abt Associates for evaluating the program on the basis of these criteria would allow a valid judgment of the success of Mulligan Stew to be made.

Footnotes*

1. Survey results indicate that 85% of fourth graders, 71% of fifth graders, and 53% of sixth graders liked the show.

2. See Tables 7-13 (pps. 91, 94, 97, 99, 103, 105, and 108). These tables demonstrate the effects on the seven impact areas for fourth, fifth, and sixth grade children. Rows 1 and 2 of these tables compare the effects on control group children with the effects on those in all experimental groups.

3. Row 2 of Tables 7-13 compares the effects of Mulligan Stew upon children in each grade. Fourth graders generally show the strongest gains.

4. Ratings were on an 11-point scale, with "Very Low" rating 0 and "Very High" rating 10. Forty-six teachers rated the comic book in a variety of categories. The "Pupil Interest" category received a rating of 8.7.

5. This effect is demonstrated in row 5 (with-comic viewing), as compared to row 6 (without-comic viewing), in Tables 7-13.

6. Reports of viewing varied from 31%-55% for the "at-home" group, compared to 68%-91% for the "in-school" group, for any one show.

7. See rows 3 (in-school viewing) and 4 (at-home viewing in Tables 7-13.

8. 27%-41% of the "at-home" group reported that one or both parents watched the show, as compared to 6% to 13% of the parents of the "in-school" group.

9. See row 7 (in-school/with-comic viewing) of Tables 7-13.

10. See row 10 (at-home/without-comic viewing) of Tables 7-13.

11. Fourth grade children demonstrated an 18% increase in the number correct, 16% more than fourth grade control group children. Fifth graders gained 22%; 20% more than their controls, and sixth grade experimental group children gained 17% more than their controls. See Table 7, page 91.

12. The experimental group for each grade showed a 7% reduction in the proportion of "junk" foods selected, while controls for each grade showed a 3% increase. See Table 10, page 99.

13. Among those children who had not heard of 4-H at the time they took the pretest, 54% to 66% of the experimental children stated on the post-test that they had heard of 4-H. Among the control group there was a 20% to 29% increase in awareness of 4-H. See Table 13, page 108.

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*All tables and other materials referred to herein are to be found in Volume II.

14. Children whose reading levels are at or above their grade level show an average 27% increase in the number of correct answers on the nutrition knowledge test. Children whose reading levels are below their grade levels also show an increase, averaging 14.5%. See page 112.

15. See Table 8, page 94.

16. See Table 49, page 114.

17. See Table 11, page 103.

18. See Table 9, page 97.

19. See Table 12, page 105.

20. Ratings were on an 11-point scale, with "Very Low" rating 0 and "Very High" rating 10. Mulligan Stew, as a "nutrition-education resource in general" received a rating of 6.9. As a vehicle to "develop better nutrition behavior among your pupils", it received a rating of 5.6.

APPENDIX A

TABLE 14

COMPARISON OF CONTROL AND EXPERIMENTAL CONDITIONS ON SELECTED MEASURES AMONG FOURTH GRADE CHILDREN

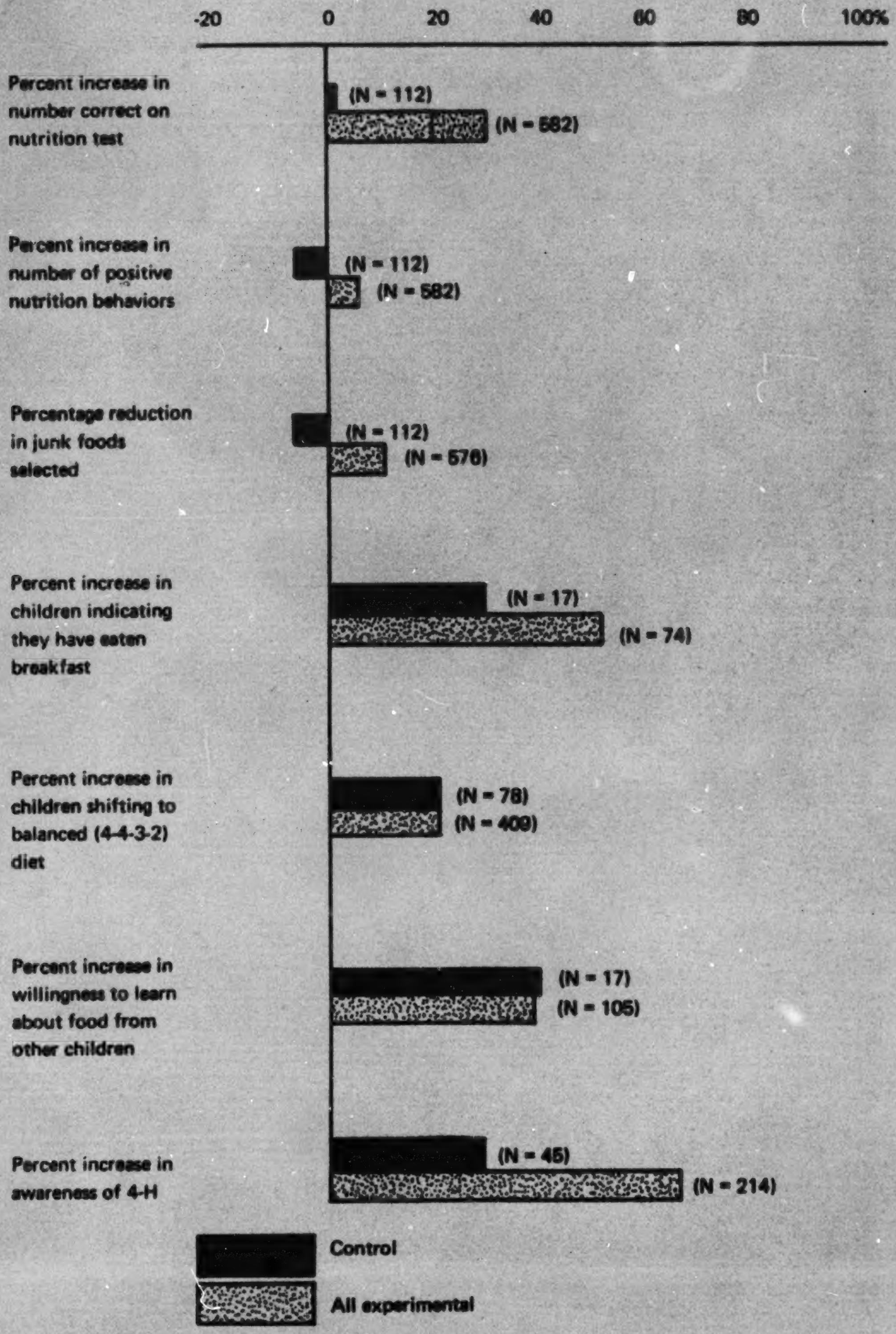


TABLE 15

COMPARISON OF CONTROL AND IN-SCHOOL VIEWING ON SELECTED MEASURES AMONG FOURTH GRADE CHILDREN

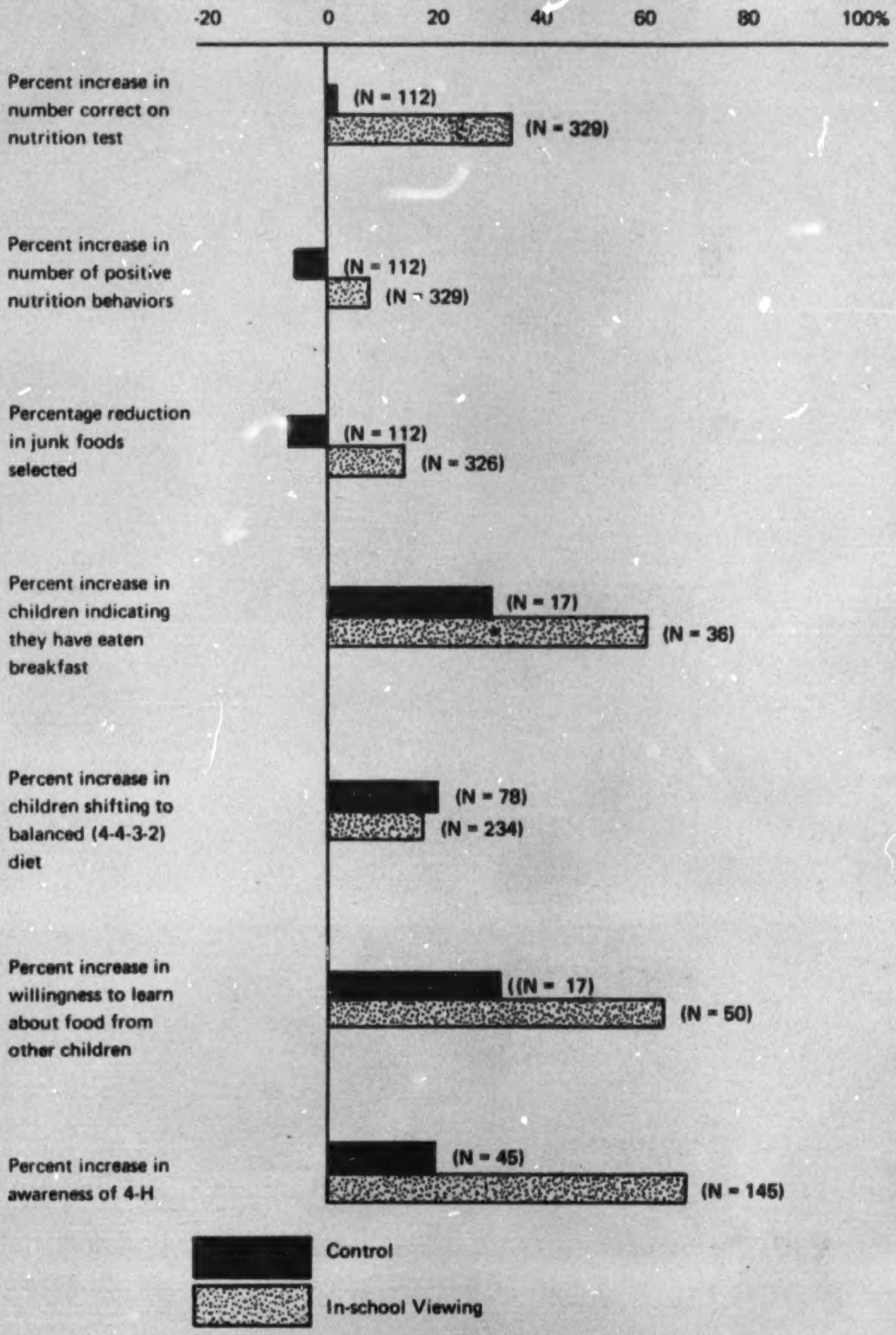


TABLE 16

COMPARISON OF CONTROL AND AT-HOME VIEWING ON SELECTED MEASURES AMONG FOURTH GRADE CHILDREN

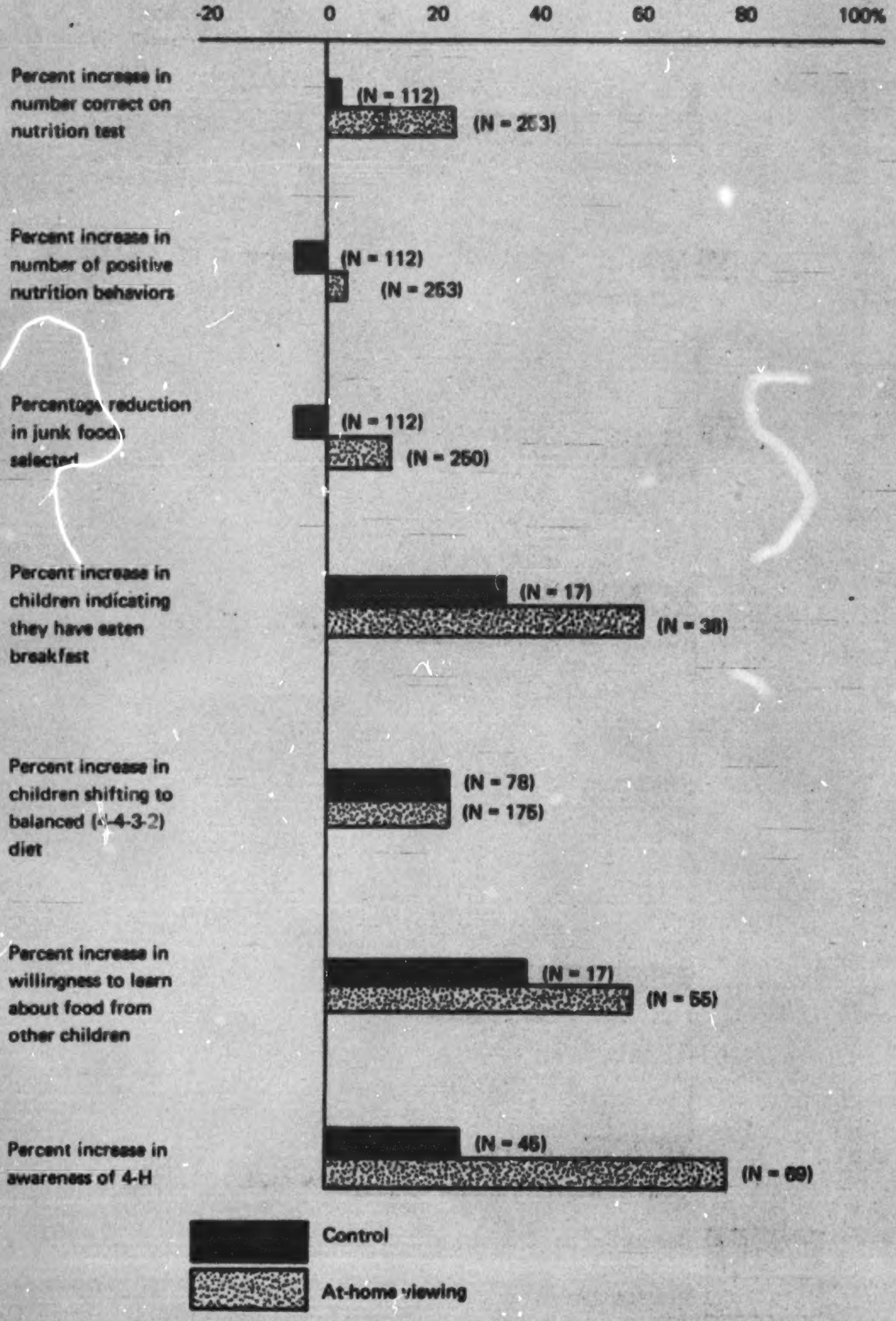


TABLE 17

COMPARISON OF CONTROL AND WITH-COMIC VIEWING ON SELECTED MEASURES AMONG FOURTH GRADE CHILDREN

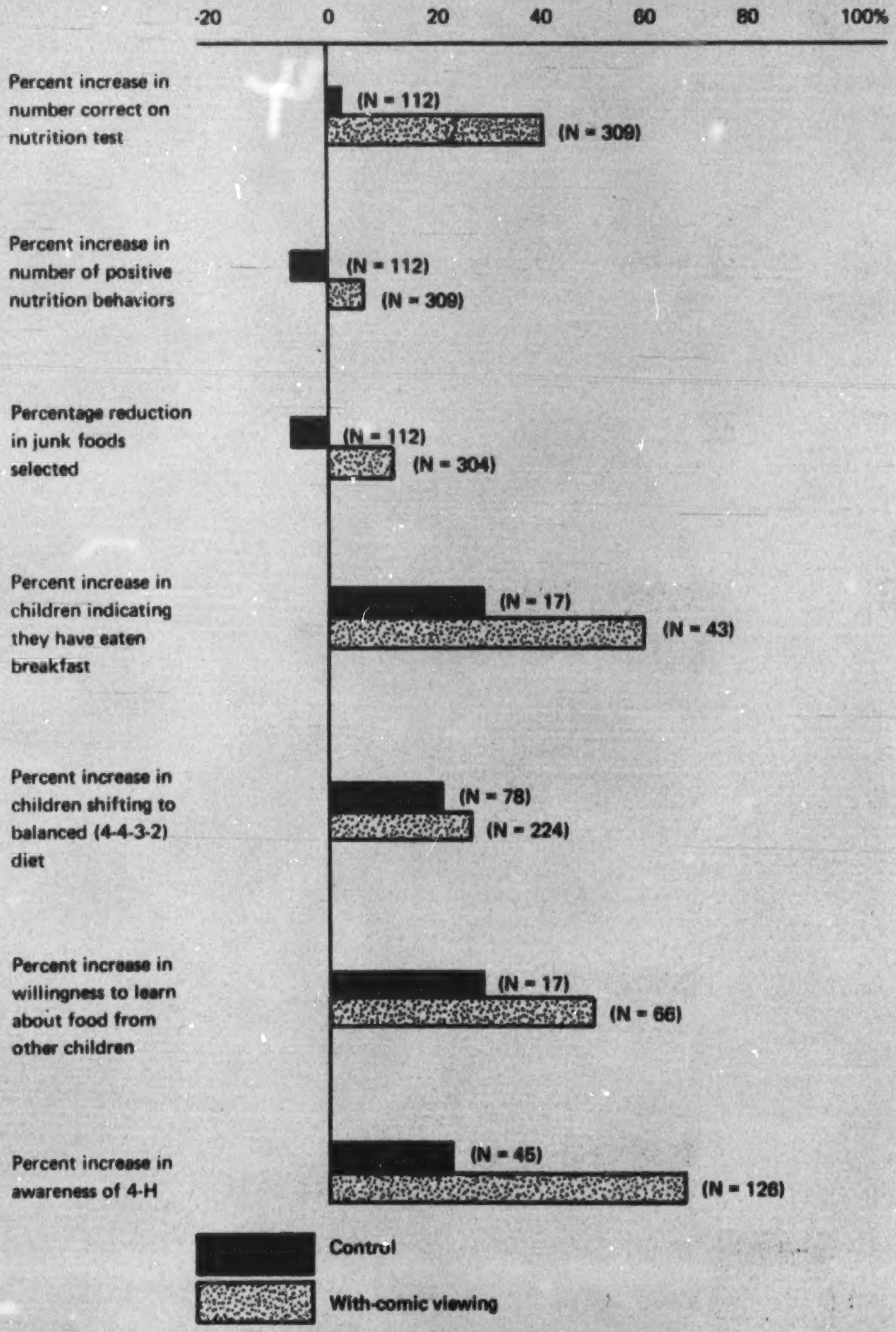


TABLE 18

COMPARISON OF CONTROL AND WITHOUT-COMIC VIEWING ON SELECTED MEASURES AMONG FOURTH GRADE CHILDREN

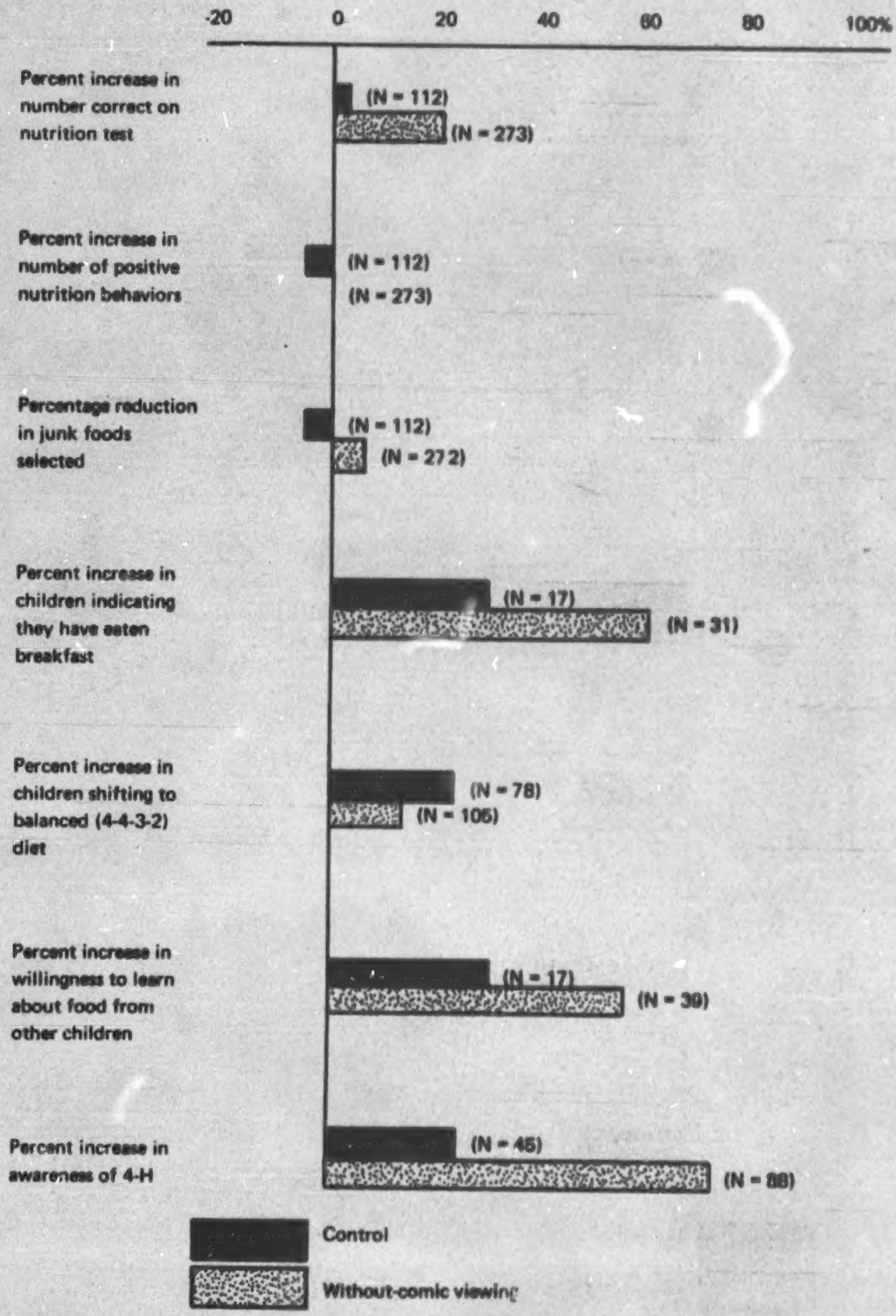


TABLE 19

COMPARISON OF CONTROL AND IN-SCHOOL/WITH- COMIC VIEWING ON SELECTED MEASURES AMONG FOURTH GRADE CHILDREN

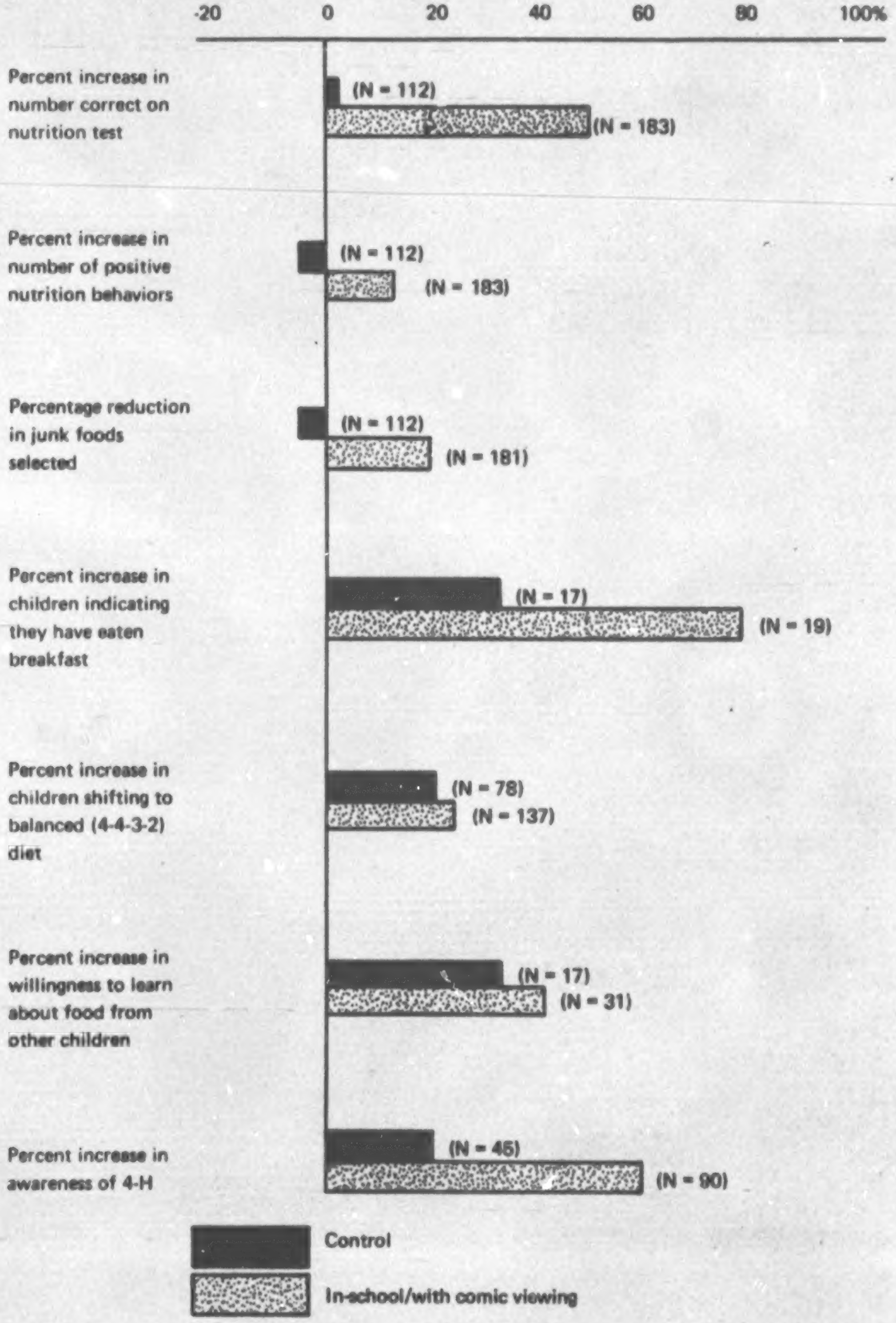


TABLE 20

COMPARISON OF CONTROL AND IN-SCHOOL/WITHOUT-COMIC VIEWING ON SELECTED MEASURES AMONG FOURTH GRADE CHILDREN

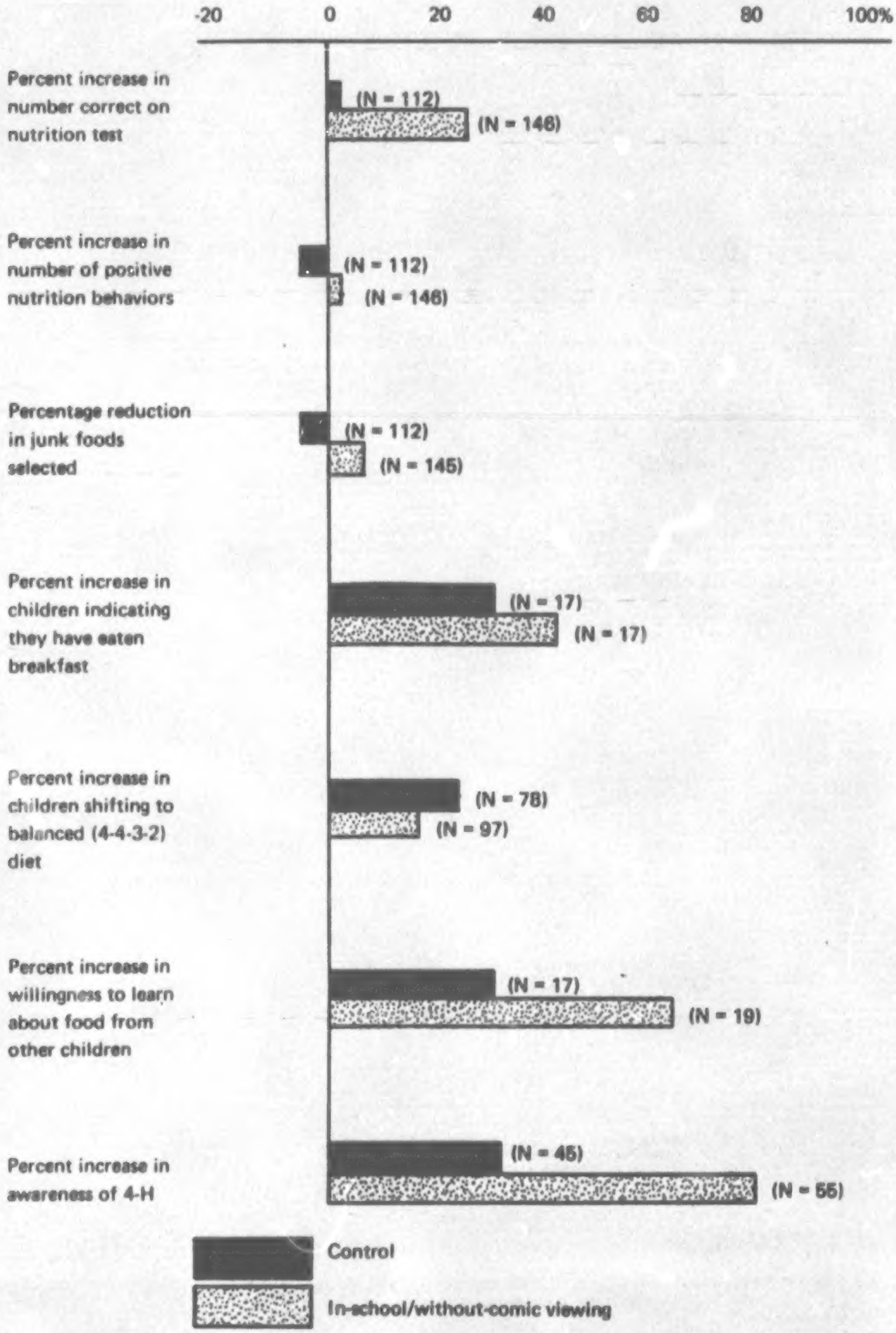


TABLE 21

COMPARISON OF CONTROL AND AT-HOME/WITH-COMIC VIEWING ON SELECTED MEASURES AMONG FOURTH GRADE CHILDREN

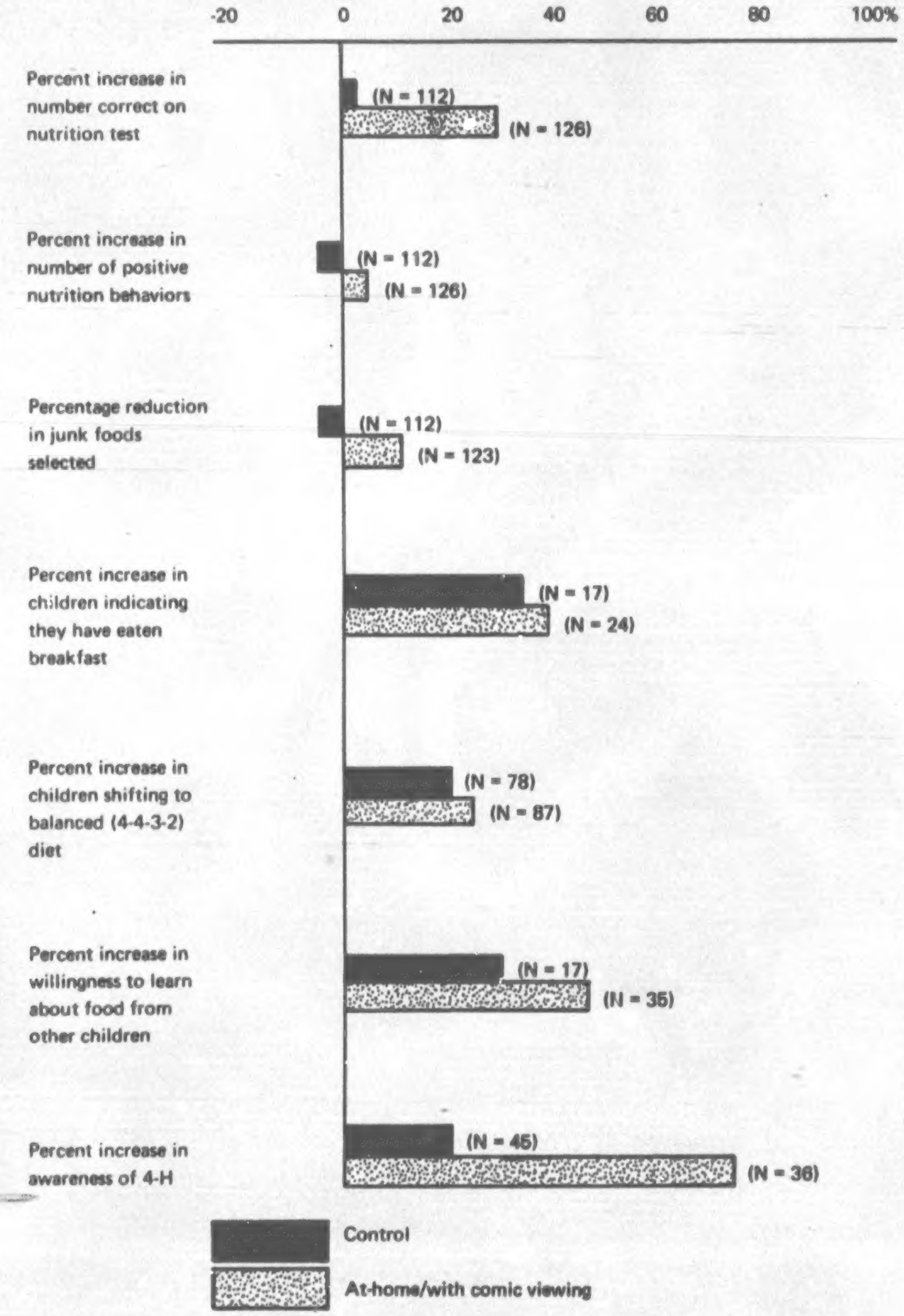


TABLE 22

COMPARISON OF CONTROL AND AT-HOME/WITHOUT-COMIC VIEWING ON SELECTED MEASURES AMONG FOURTH GRADE CHILDREN

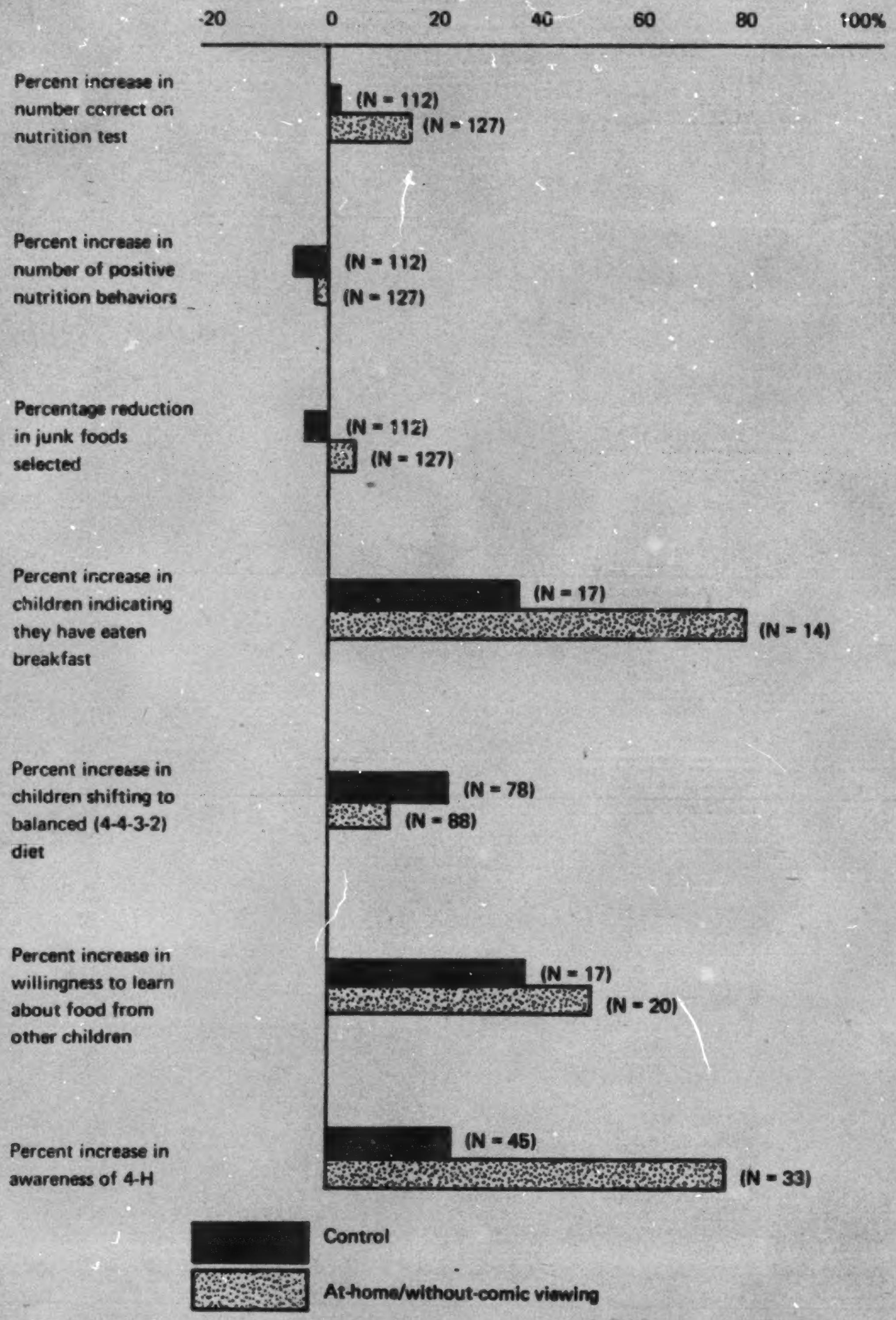


TABLE 23

COMPARISON OF CONTROL AND EXPERIMENTAL CONDITIONS ON SELECTED MEASURES AMONG FIFTH GRADE CHILDREN

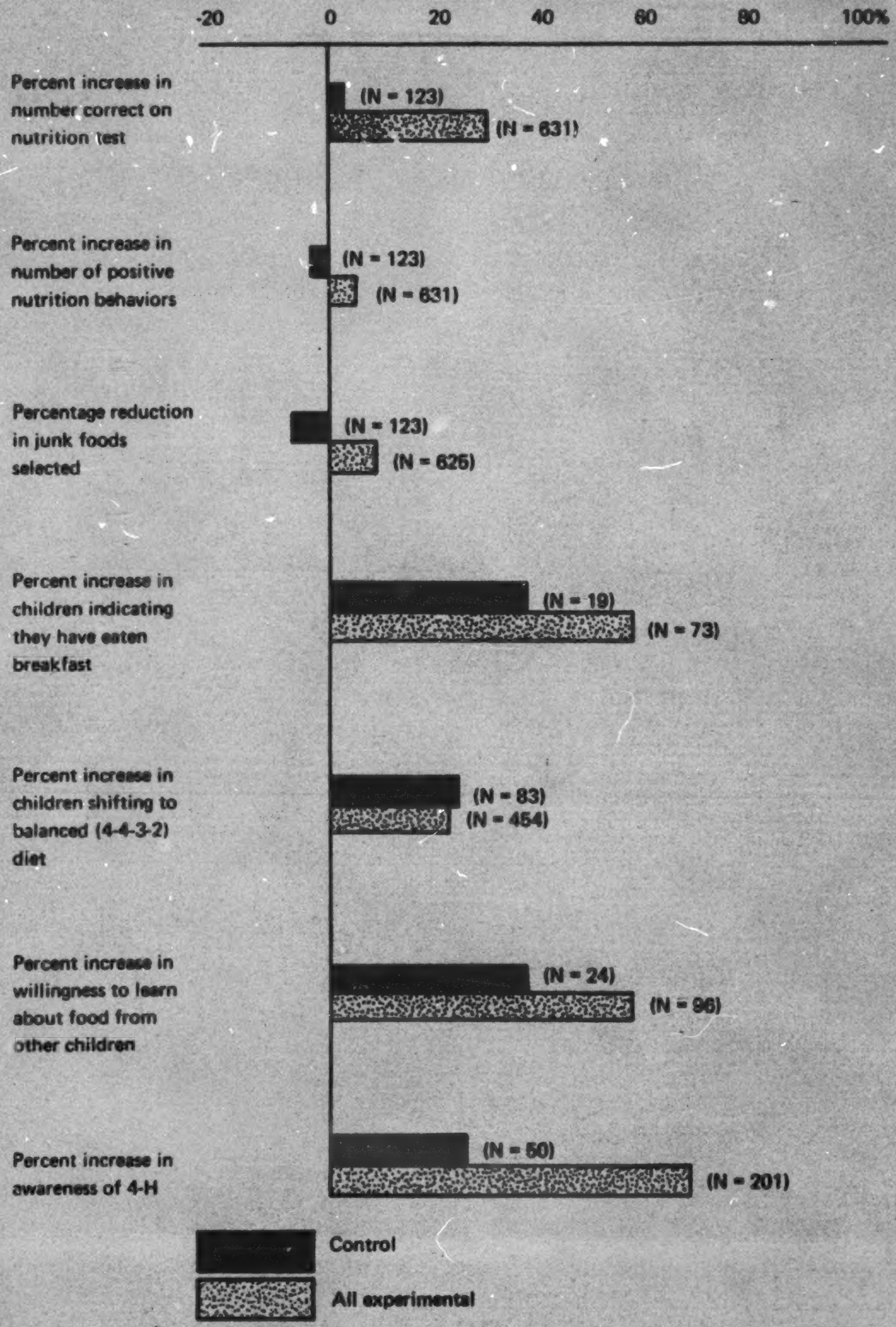


TABLE 24

COMPARISON OF CONTROL AND IN-SCHOOL VIEWING ON SELECTED MEASURES AMONG FIFTH GRADE CHILDREN

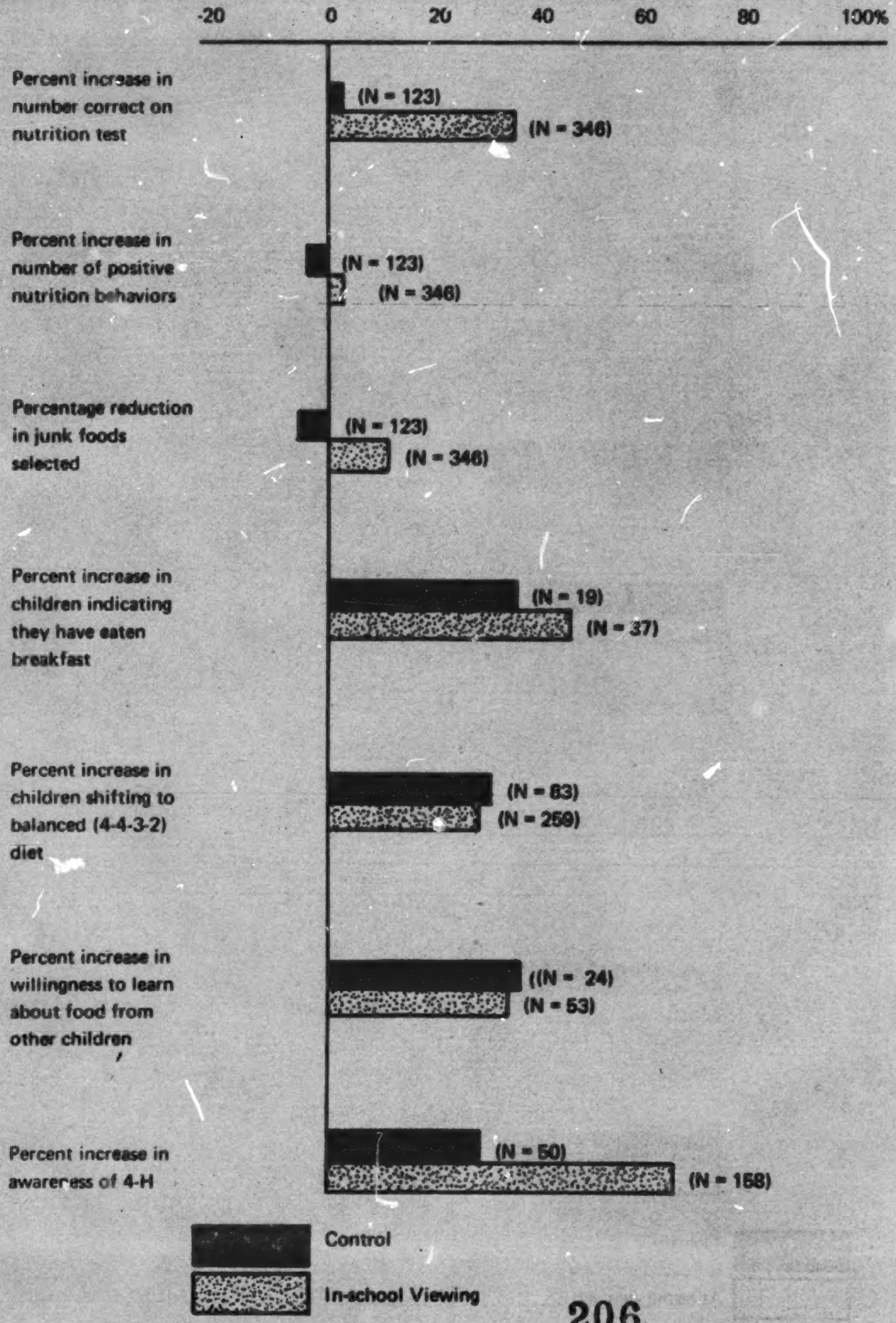


TABLE 25

COMPARISON OF CONTROL AND AT-HOME VIEWING ON SELECTED MEASURES AMONG FIFTH GRADE CHILDREN

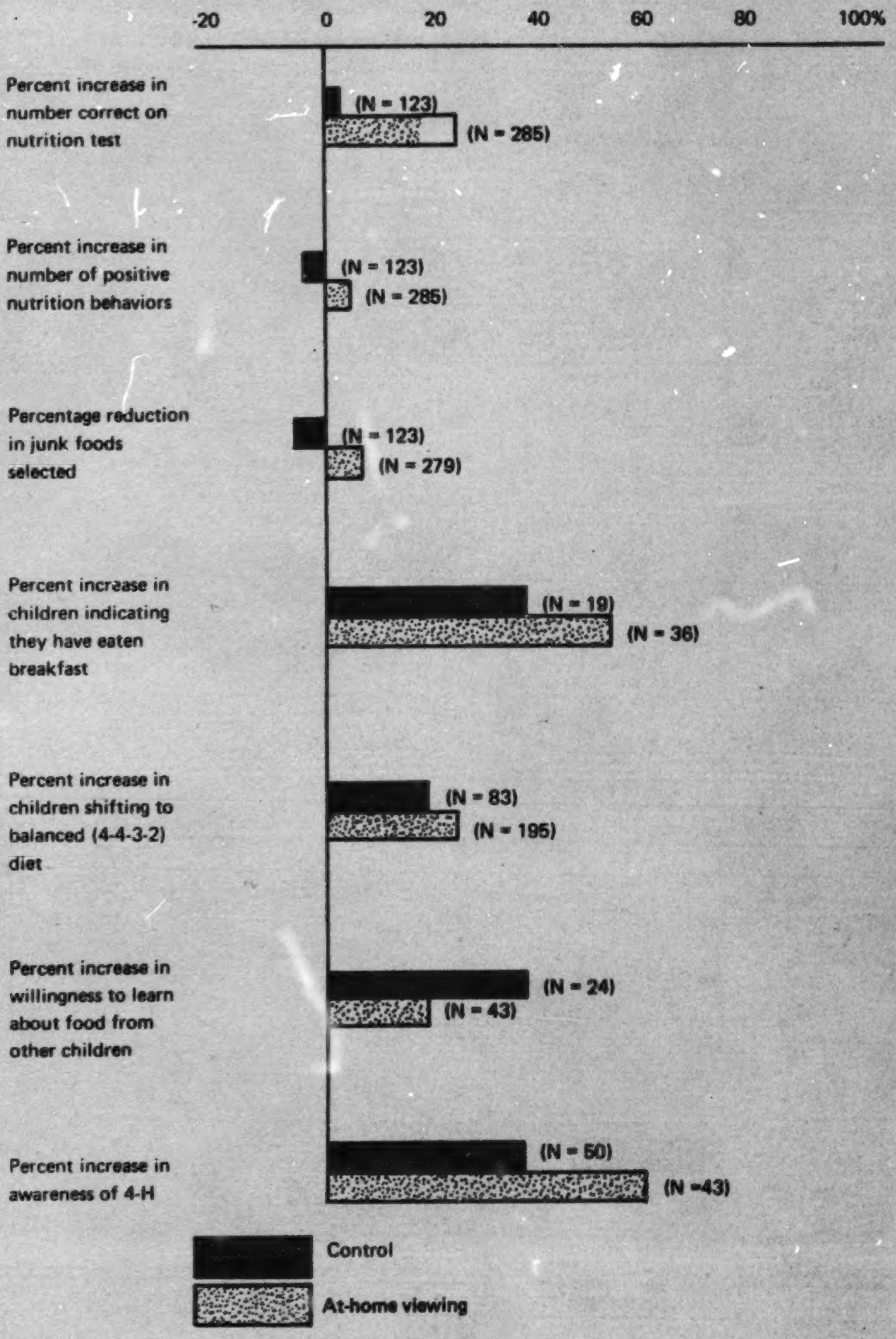


TABLE 26

COMPARISON OF CONTROL AND WITH-COMIC VIEWING ON SELECTED MEASURES AMONG FIFTH GRADE CHILDREN

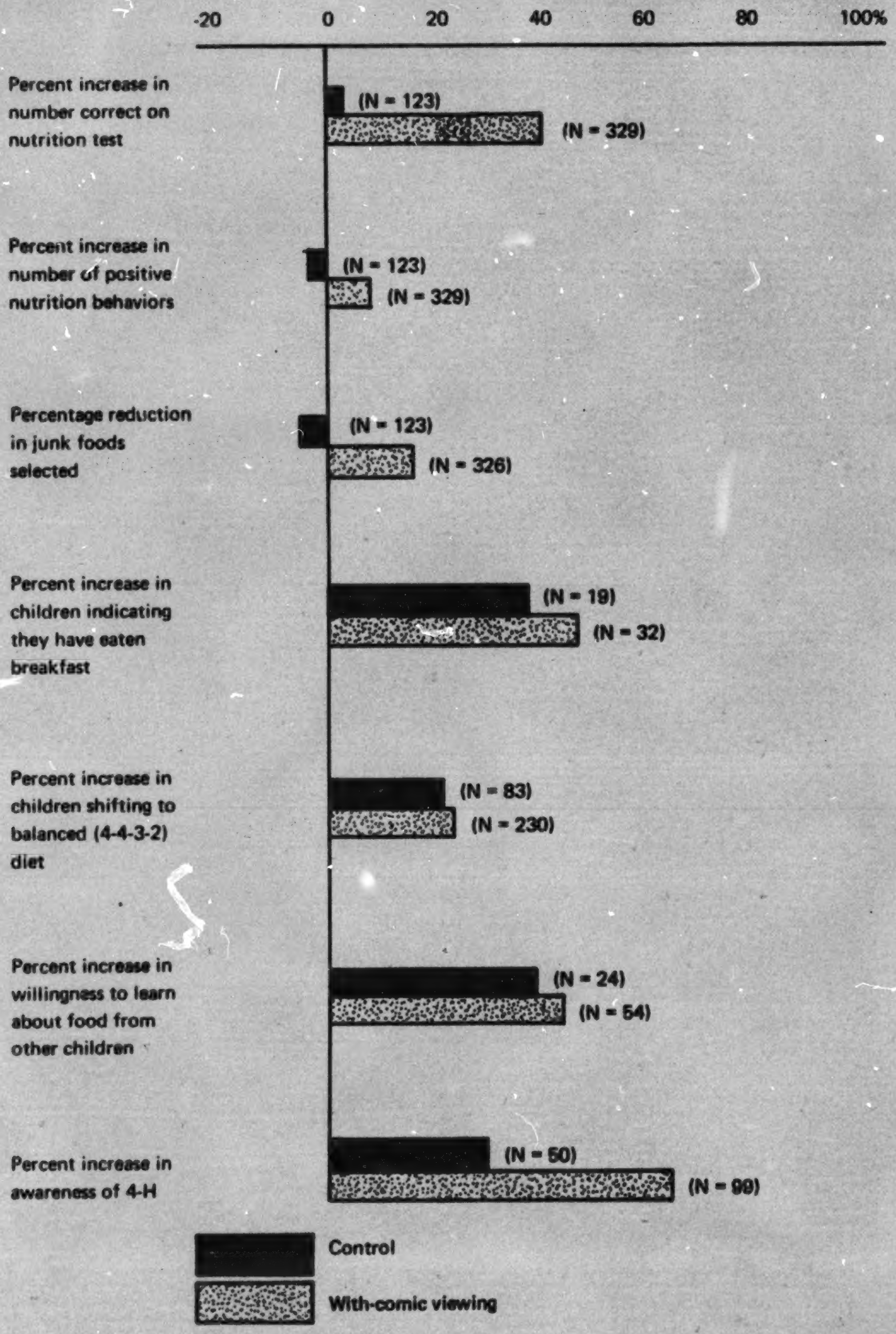


TABLE 27

COMPARISON OF CONTROL AND WITHOUT-COMIC VIEWING ON SELECTED MEASURES AMONG FIFTH GRADE CHILDREN

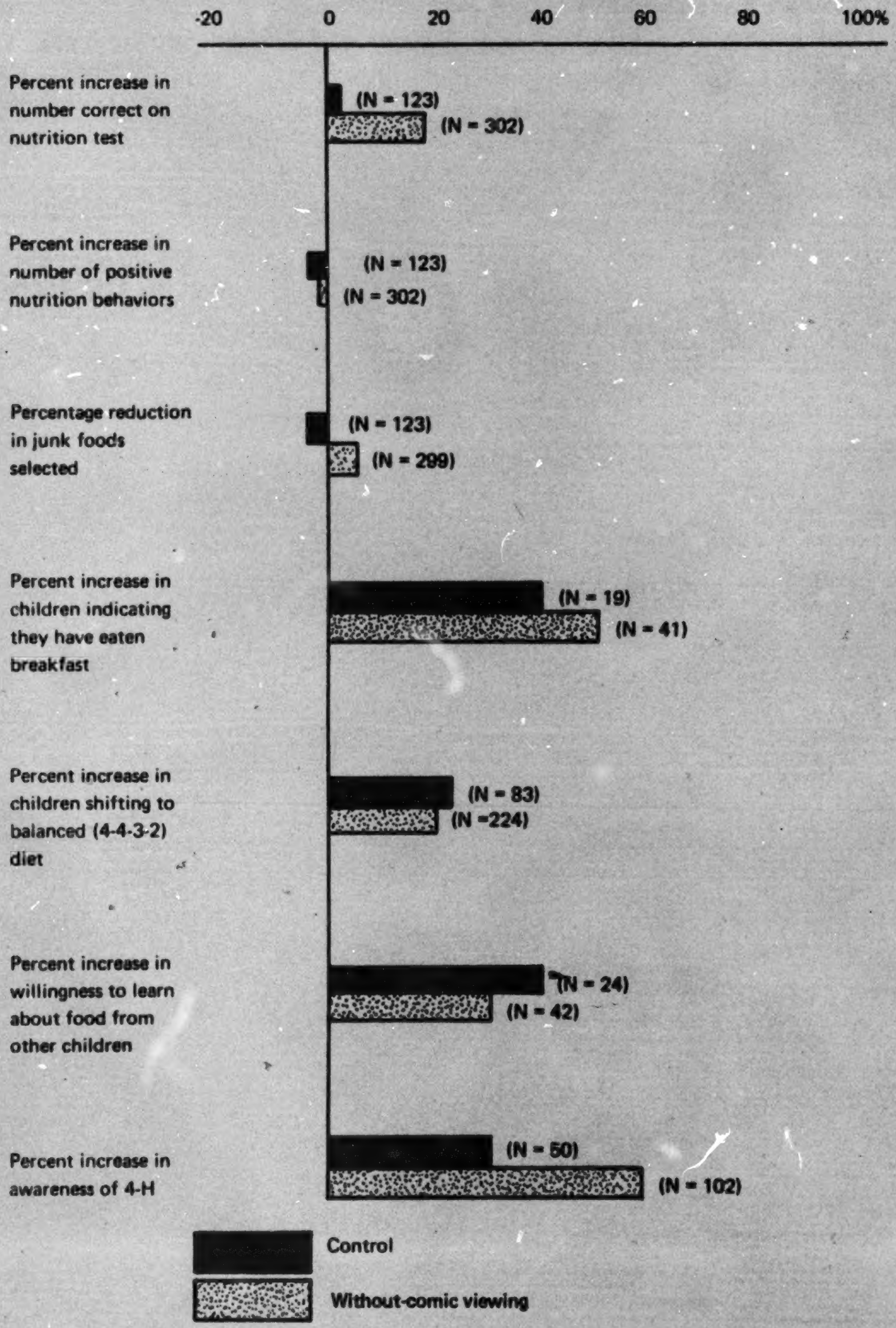


TABLE 28

COMPARISON OF CONTROL AND IN-SCHOOL/WITH-COMIC VIEWING ON SELECTED MEASURES AMONG FIFTH GRADE CHILDREN

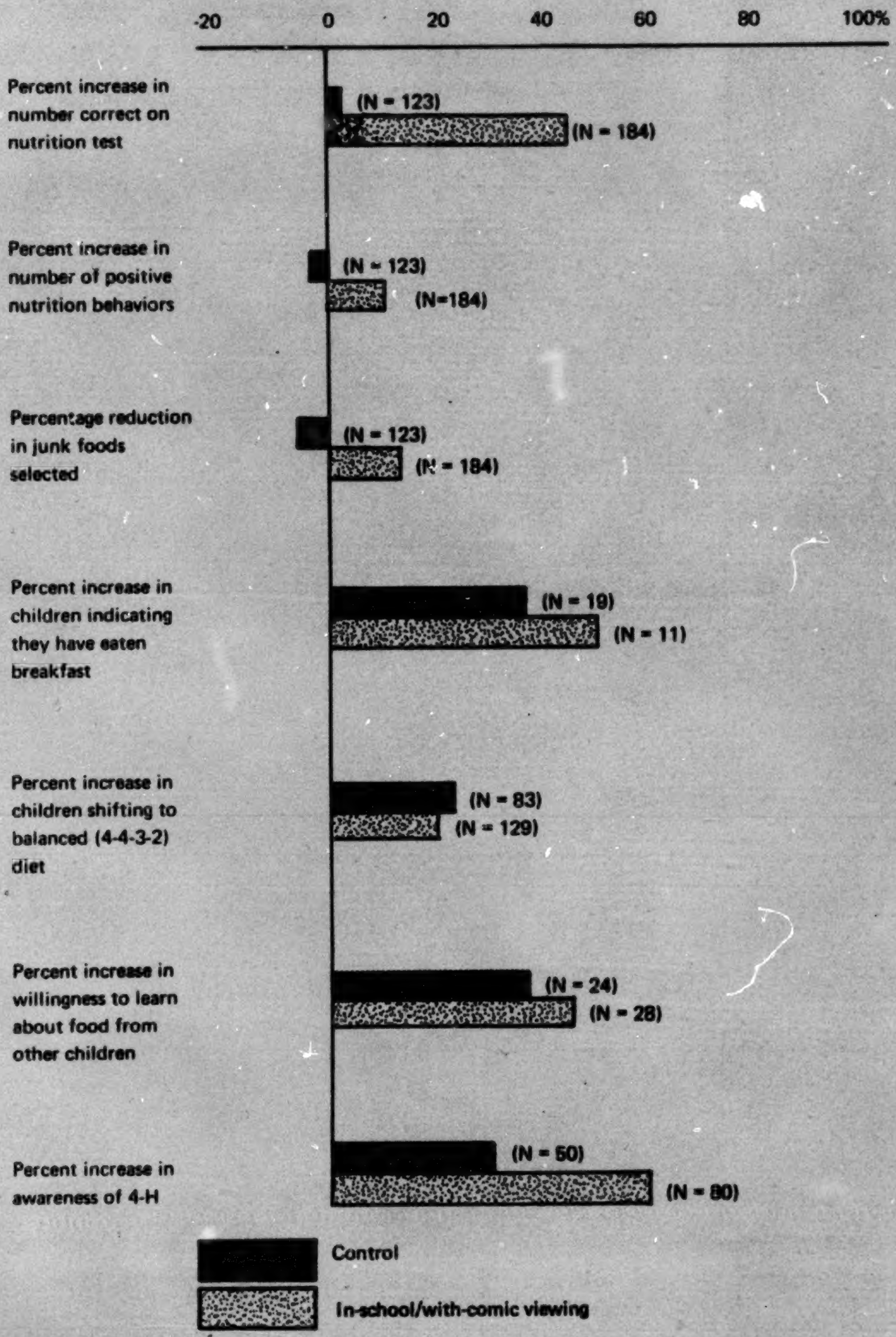


TABLE 29

COMPARISON OF CONTROL AND IN-SCHOOL/WITHOUT-COMIC VIEWING ON SELECTED MEASURES AMONG FIFTH GRADE CHILDREN

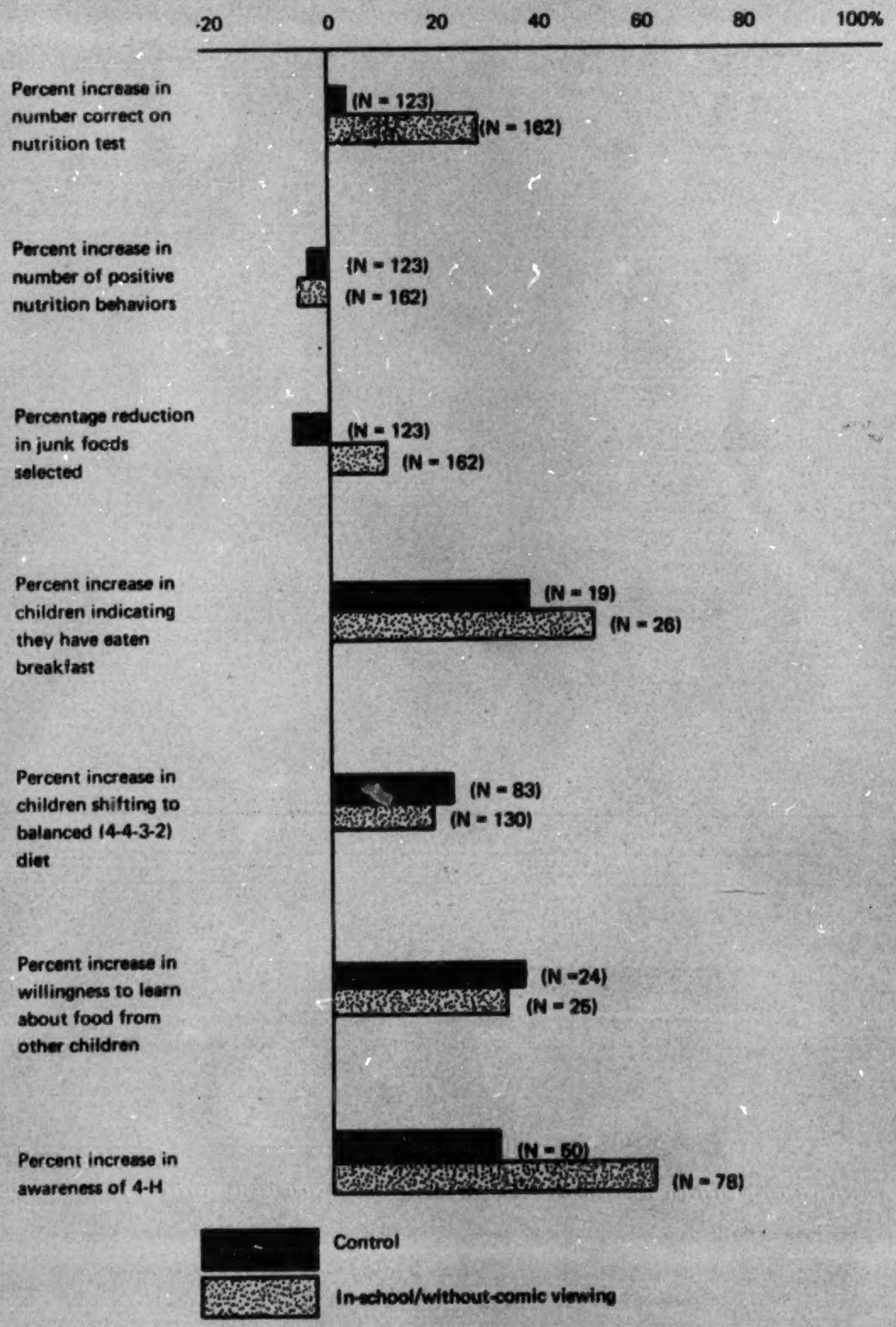


TABLE 30

COMPARISON OF CONTROL AND AT-HOME/WITH-COMIC VIEWING ON SELECTED MEASURES AMONG FIFTH GRADE CHILDREN

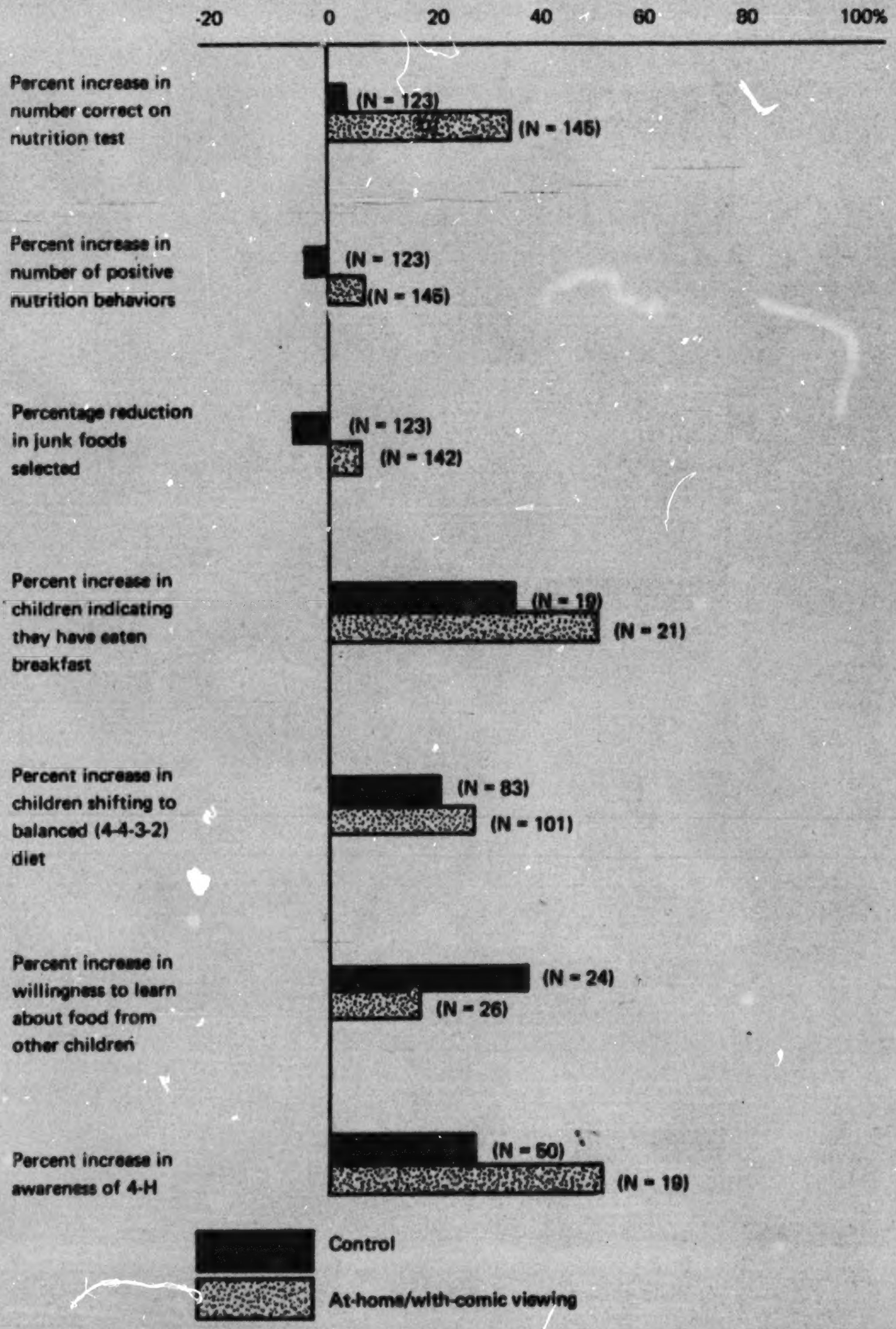


TABLE 31

COMPARISON OF CONTROL AND AT-HOME/WITHOUT-COMIC VIEWING ON SELECTED MEASURES AMONG FIFTH GRADE CHILDREN

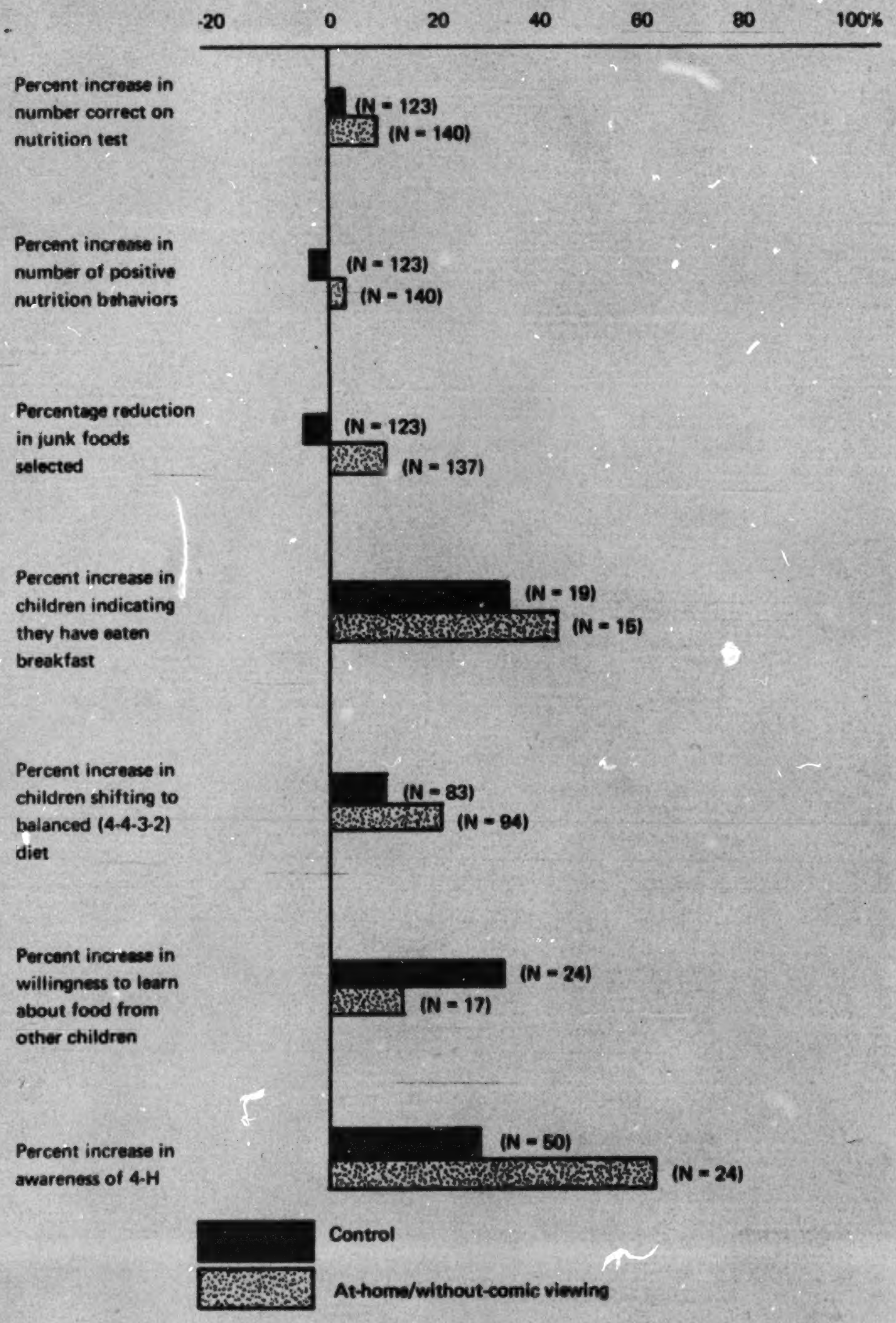


TABLE 32

COMPARISON OF CONTROL AND EXPERIMENTAL CONDITIONS ON SELECTED MEASURES AMONG SIXTH GRADE CHILDREN

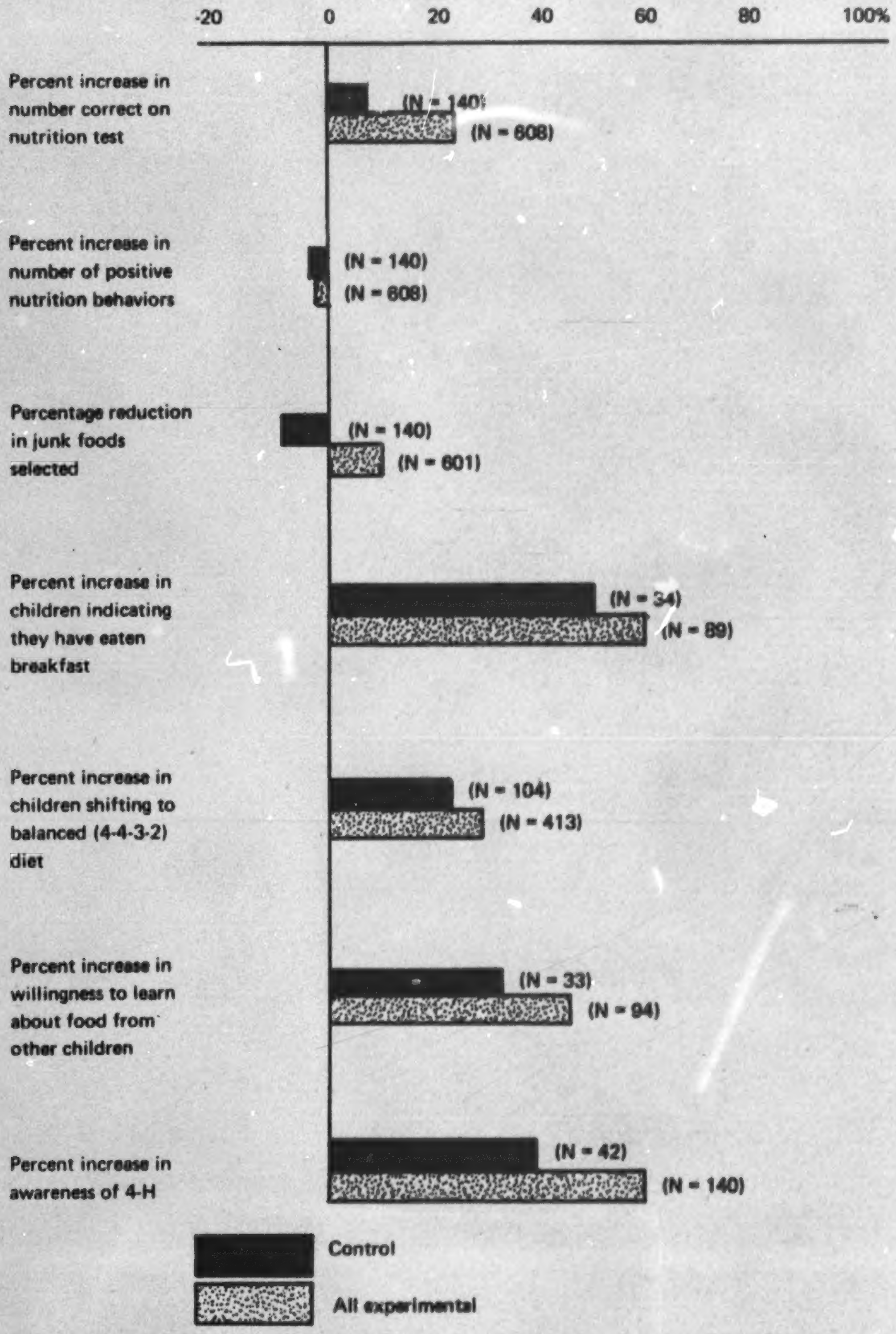


TABLE 33

COMPARISON OF CONTROL AND IN-SCHOOL VIEWING ON SELECTED MEASURES AMONG SIXTH GRADE CHILDREN

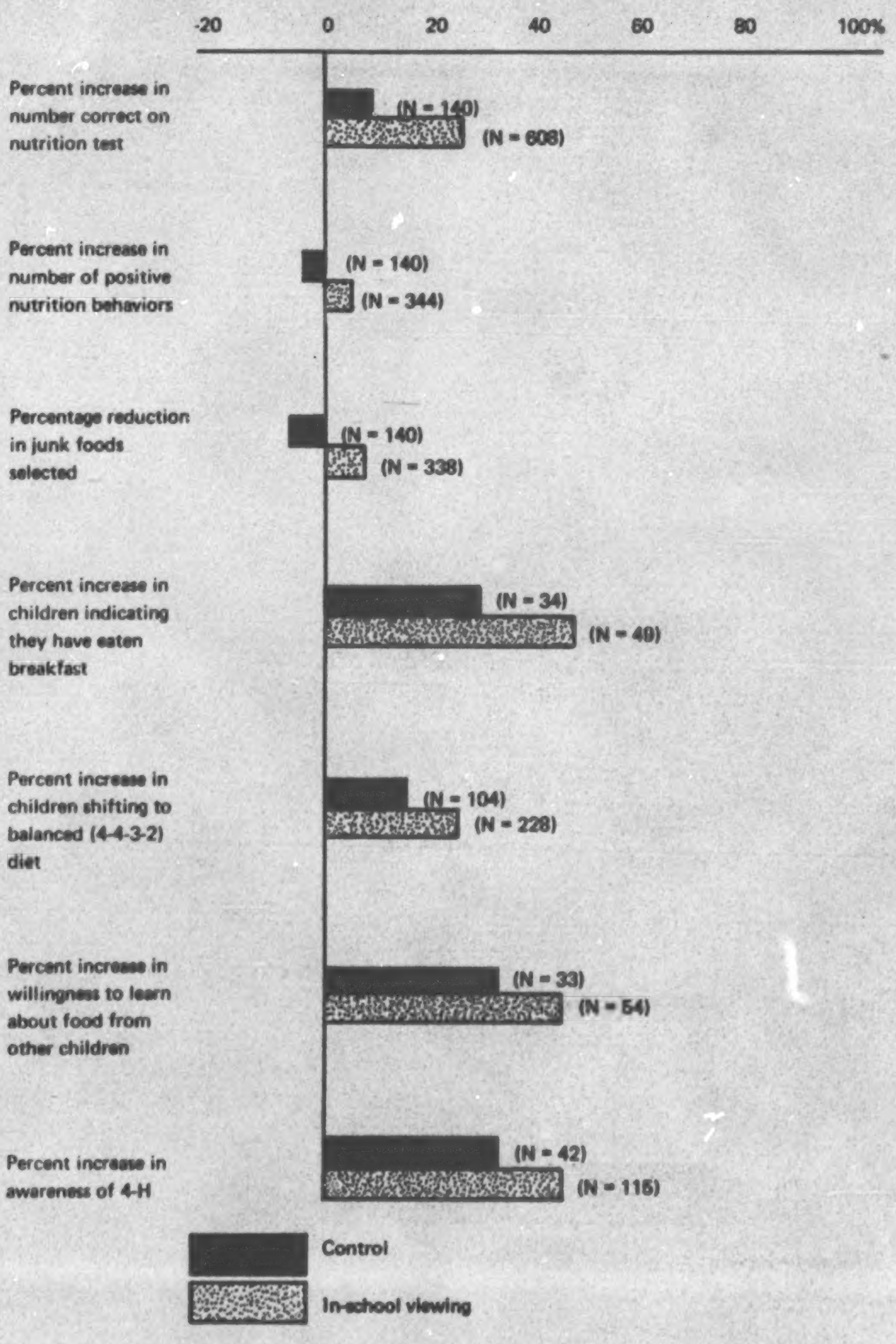


TABLE 34

COMPARISON OF CONTROL AND AT-HOME VIEWING ON SELECTED MEASURES AMONG SIXTH GRADE CHILDREN

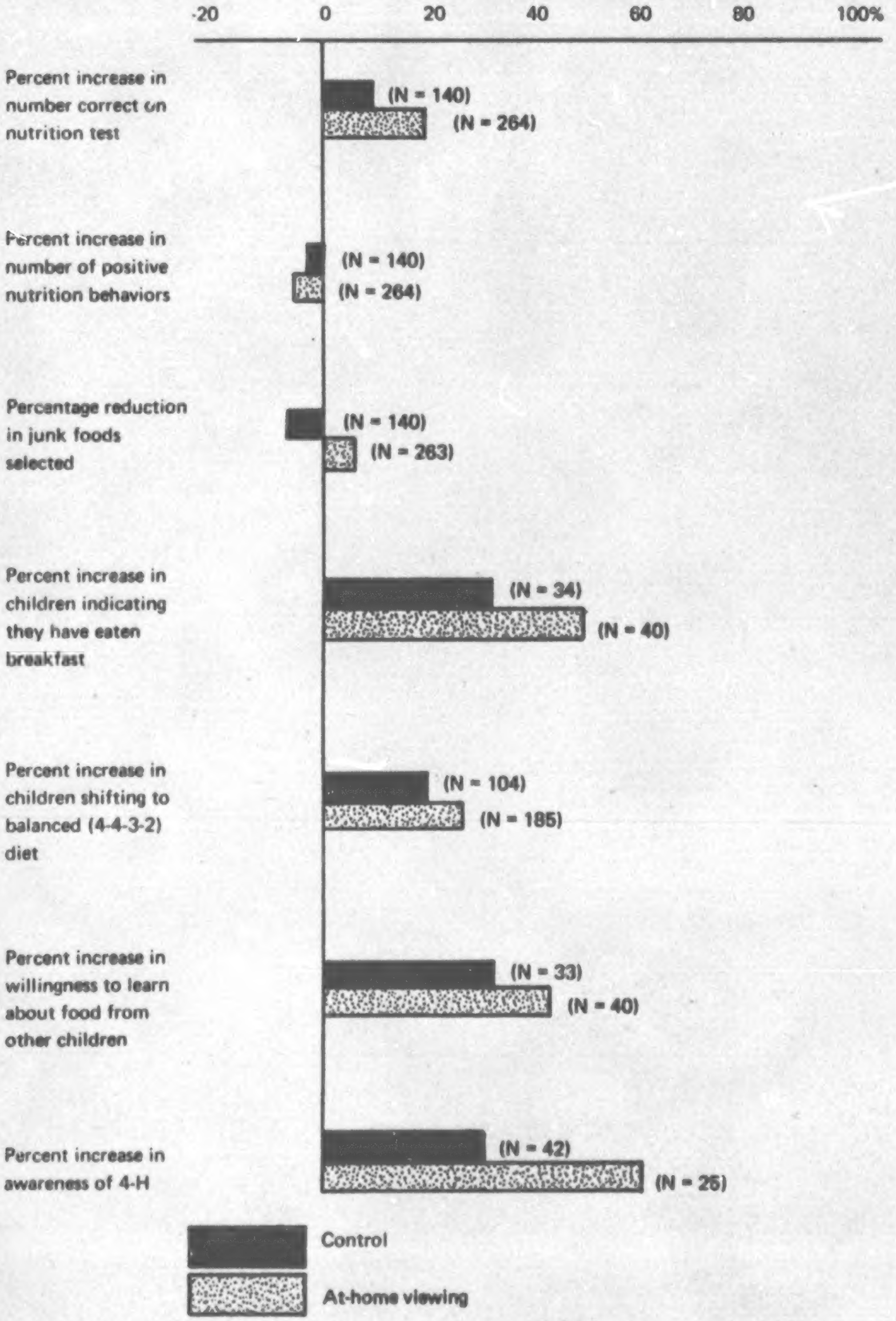


TABLE 35

COMPARISON OF CONTROL AND WITH-COMIC VIEWING ON SELECTED MEASURES AMONG SIXTH GRADE CHILDREN

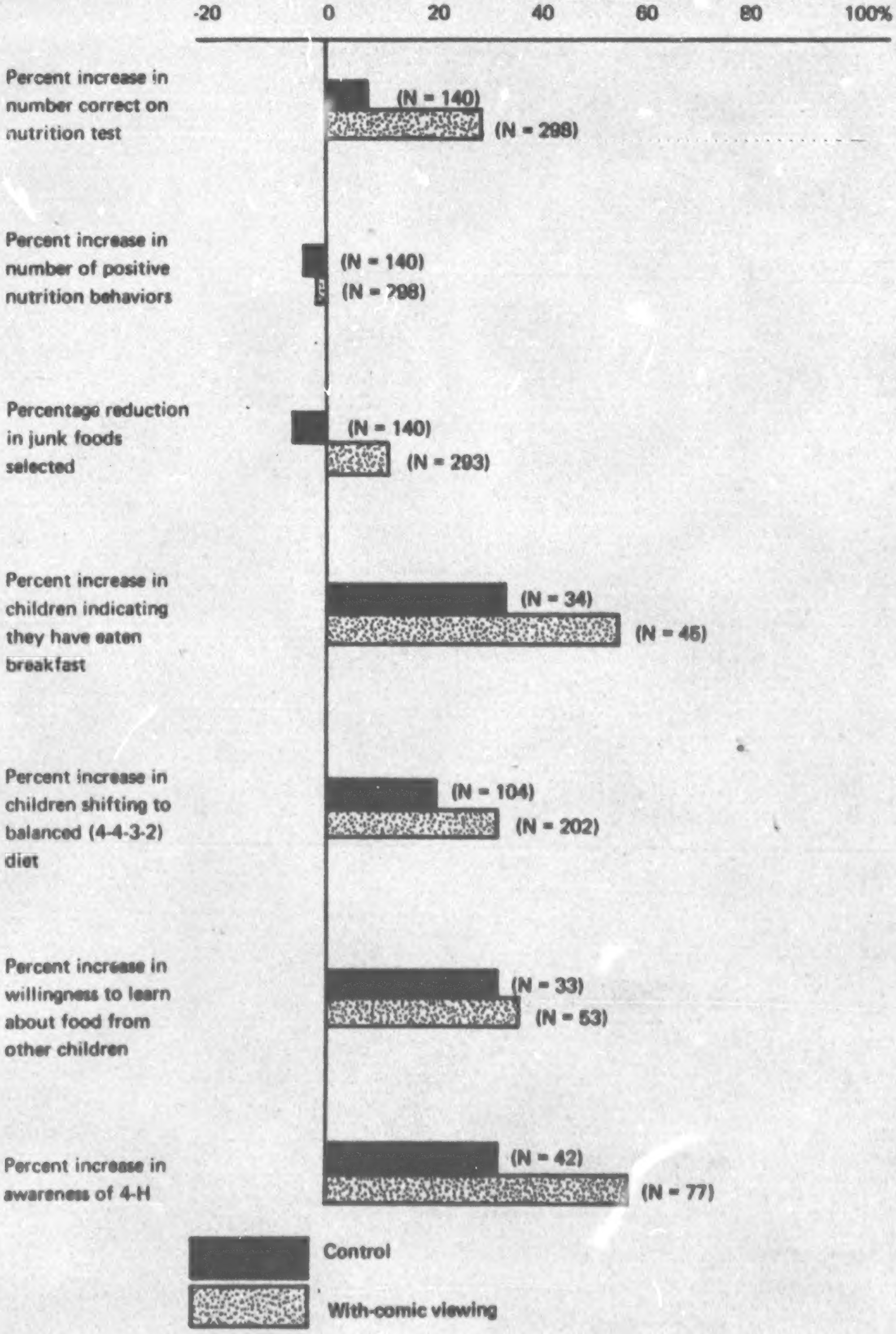


TABLE 36

COMPARISON OF CONTROL AND WITHOUT-COMIC VIEWING ON SELECTED MEASURES AMONG SIXTH GRADE CHILDREN

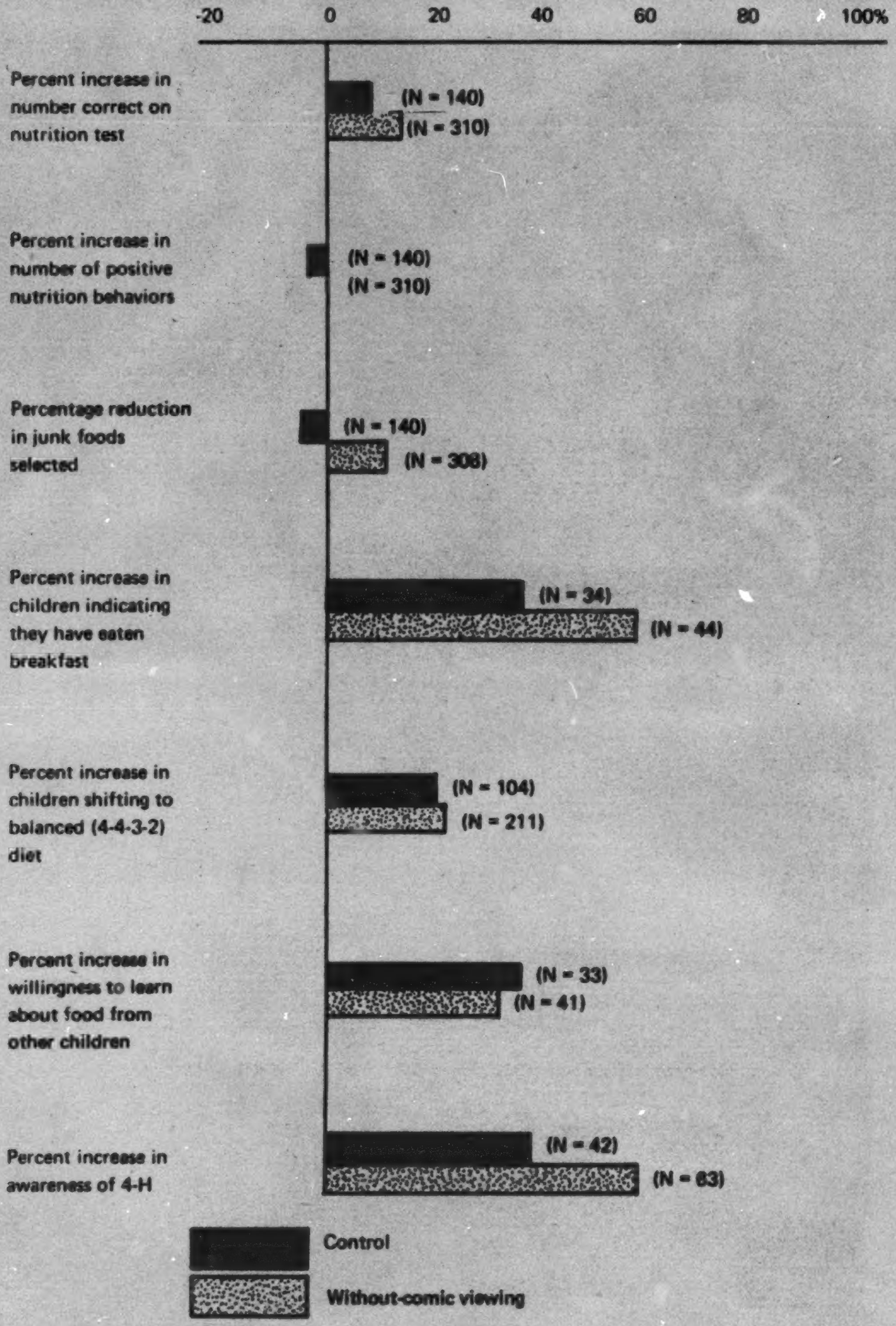


TABLE 37

COMPARISON OF CONTROL AND IN-SCHOOL/WITH-COMIC VIEWING ON SELECTED MEASURES AMONG SIXTH GRADE CHILDREN

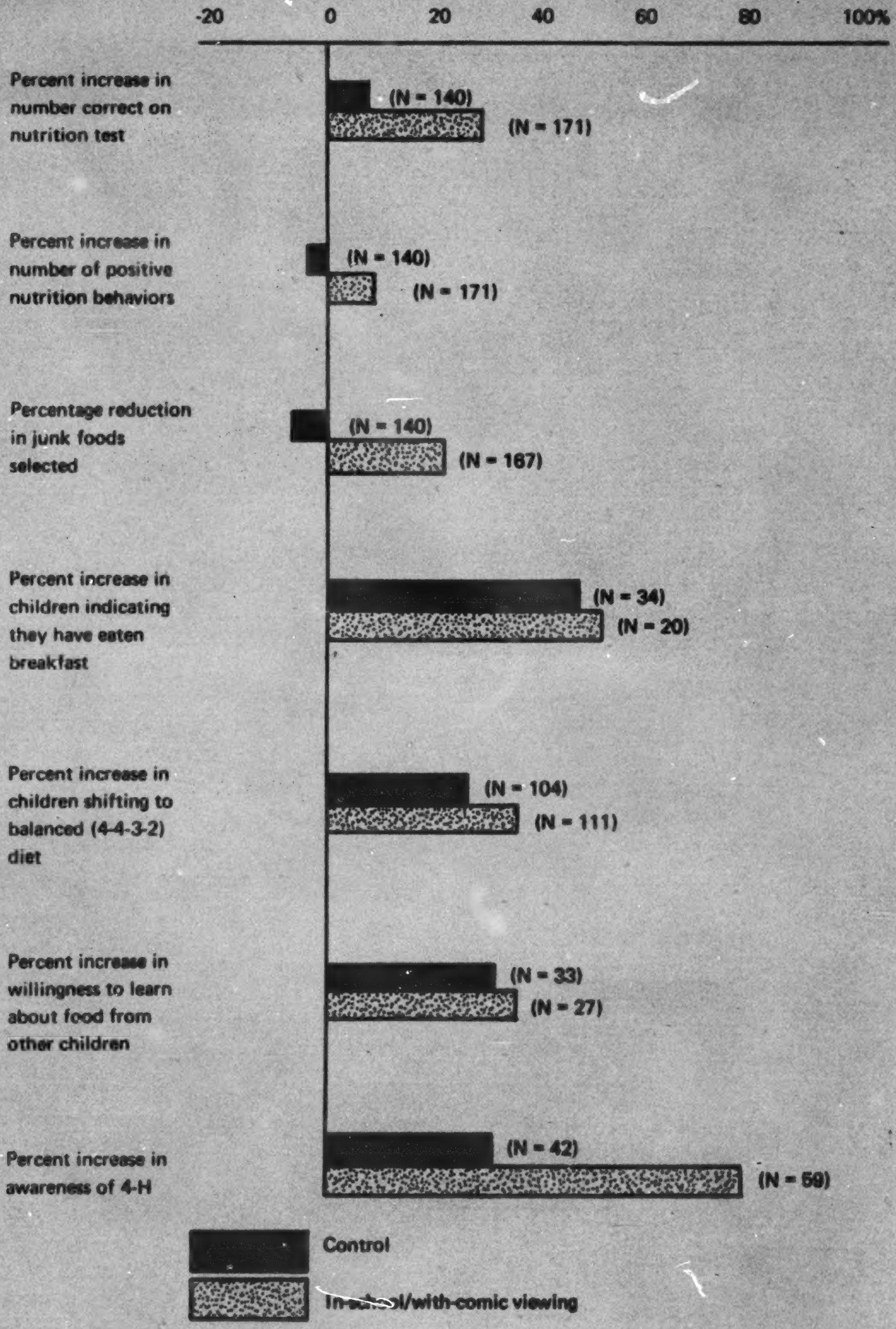


TABLE 38

COMPARISON OF CONTROL AND IN-SCHOOL/WITHOUT-COMIC VIEWING ON SELECTED MEASURES AMONG SIXTH GRADE CHILDREN

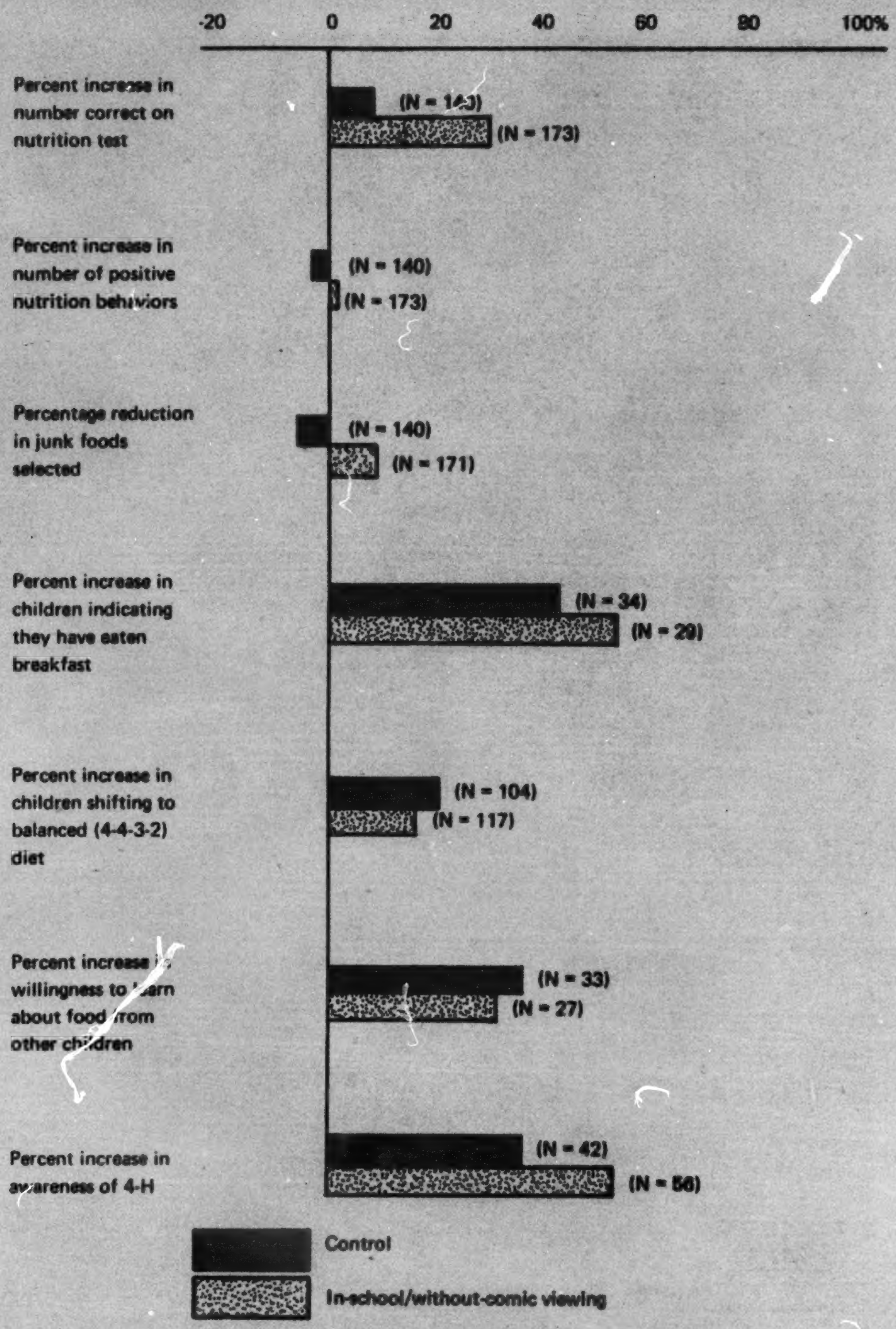


TABLE 39

COMPARISON OF CONTROL AND AT-HOME/WITH-COMIC VIEWING ON SELECTED MEASURES AMONG SIXTH GRADE CHILDREN

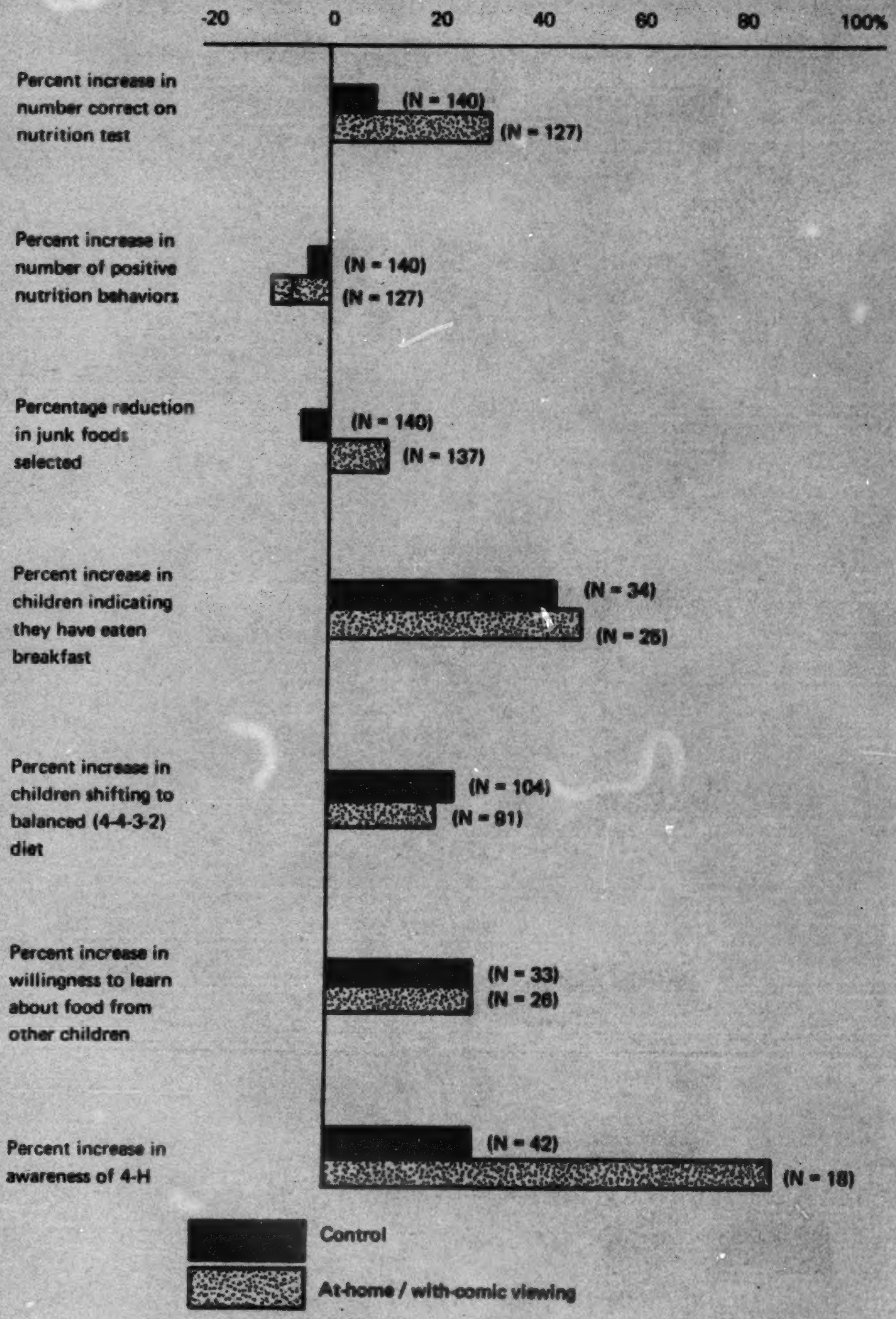
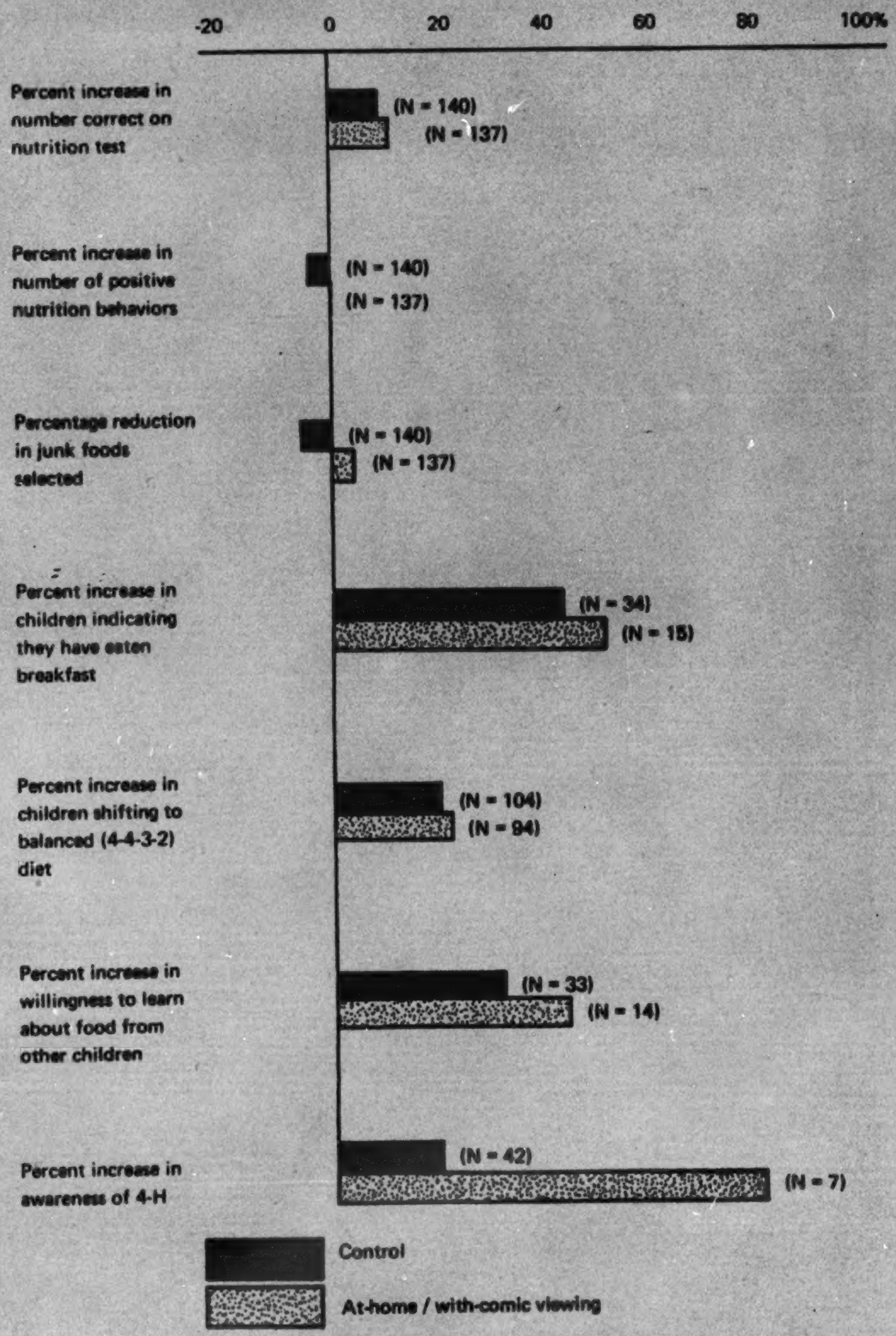


TABLE 40

COMPARISON OF CONTROL AND AT-HOME/WITHOUT-COMIC VIEWING ON SELECTED MEASURES AMONG SIXTH GRADE CHILDREN



APPENDIX B

TABLE 41

DATA FROM WHICH PER CENT INCREASE IN NUMBER CORRECT ON NUTRITION KNOWLEDGE TEST WAS COMPUTED

	Pretest Mean			Post-test Mean			Difference		
	4th	5th	6th	4th	5th	6th	4th	5th	6th
Control Group	8.99	9.69	10.74	9.24	9.95	11.62	.25	.26	.89
All Experimental Conditions	9.03	9.96	11.87	11.72	12.83	14.42	2.69	2.87	2.55
In-School Viewing	9.17	9.98	11.71	12.46	13.55	14.51	3.29	3.57	2.80
At-Home Viewing	8.90	9.93	12.03	10.97	12.11	14.33	2.07	2.18	2.30
With-Comic Viewing	8.93	9.84	11.52	12.46	13.78	14.80	3.53	3.94	3.28
Without-Comic Viewing	9.13	10.08	12.22	10.97	11.88	14.04	1.84	1,80	1.82
In-School/With-Comic Viewing	8.89	9.97	11.83	13.15	14.36	15.07	4.26	4.40	3.25
In-School/Without-Comic Viewing	9.45	9.99	11.58	11.78	12.73	13.95	2.34	2.74	3.38
At-Home/With-Comic Viewing	8.98	9.70	11.20	11.78	13.19	14.53	2.79	3.49	3.33
At-Home/Without-Comic Viewing	8.81	10.16	12.86	10.17	11.03	14.12	1.35	.87	1.26

TABLE 42

DATA FROM WHICH PER CENT INCREASE IN NUMBER OF POSITIVE NUTRITION-RELATED BEHAVIORS WAS COMPUTED

	Pretest Mean			Post-test Mean			Difference		
	4th	5th	6th	4th	5th	6th	4th	5th	6th
Control Group	2.91	2.72	2.66	2.74	2.64	2.58	-.17	-.08	-.08
All Experimental Conditions	2.65	2.59	2.73	2.77	2.68	2.71	.12	.09	-.02
In-School Viewing	2.55	2.60	2.52	2.73	2.66	2.65	.19	.06	.13
At-Home Viewing	2.75	2.57	2.94	2.80	2.70	2.79	.05	.13	-.15
With-Comic Viewing	2.62	2.63	2.78	2.83	2.85	2.76	.21	.22	-.02
Without-Comic Viewing	2.69	2.54	2.68	2.70	2.51	2.69	.01	-.03	.01
In-School/With-Comic Viewing	2.50	2.54	2.47	2.79	2.79	2.69	.29	.25	.22
In-School/Without-Comic Viewing	2.60	2.66	2.57	2.67	2.53	2.60	.07	-.13	.03
At-Home/With-Comic Viewing	2.73	2.72	3.09	2.87	2.91	2.80	.14	.19	-.29
At-Home/Without-Comic Viewing	2.77	2.42	2.78	2.72	2.49	2.77	-.05	.07	-.01

TABLE 43

DATA FROM WHICH PER CENT INCREASE IN CHILDREN SHIFTING TO BALANCED (4-4-3-2) DIET WAS COMPUTED

	Number selecting inadequate diet on pretest			Number selecting adequate diet on pretest who did not select adequate diet on post-test			Per cent change		
	4th	5th	6th	4th	5th	6th	4th	5th	6th
Control Group	78	83	104	15	14	15	19	17	14
All Experimental Conditions	409	454	413	72	80	85	17	18	21
In-School Viewing	234	259	228	39	41	48	16	16	21
At-Home Viewing	175	195	185	33	39	37	19	20	20
With-Comic Viewing	224	230	202	53	43	55	24	19	27
Without-Comic Viewing	105	225	211	19	37	30	10	17	14
In-School/With-Comic Viewing	137	130	111	30	22	33	22	17	30
In-School/Without-Comic Viewing	97	130	117	9	19	15	9	15	13
At-Home/With-Comic Viewing	87	101	91	23	21	22	26	21	24
At-Home/Without-Comic Viewing	88	94	94	10	18	15	11	19	16

TABLE 44

DATA FROM WHICH PER CENT DECREASE IN RATIO OF JUNK TO NUTRITIOUS FOODS SELECTED WAS COMPUTED

	Pretest Mean			Post-test Mean			Difference		
	4th	5th	6th	4th	5th	6th	4th	5th	6th
Control Group	.29	.29	.29	.30	.30	.30	.01	.01	.01
All Experimental Conditions	.29	.29	.29	.27	.27	.27	-.02	-.02	-.02
In-School Viewing	.28	.29	.28	.25	.25	.24	-.03	-.04	-.03
At-Home Viewing	.31	.30	.31	.29	.29	.29	-.02	-.01	-.02
With-Comic Viewing	.31	.31	.31	.28	.28	.28	-.03	-.03	-.03
Without-Comic Viewing	.27	.28	.27	.26	.26	.26	-.01	-.02	-.01
In-School/With-Comic Viewing	.29	.30	.29	.25	.25	.25	-.04	-.05	-.04
In-School/Without-Comic Viewing	.26	.27	.26	.25	.25	.25	-.01	-.02	-.01
At-Home/With-Comic Viewing	.33	.31	.33	.30	.30	.30	-.03	-.01	-.03
At-Home/Without-Comic Viewing	.28	.29	.28	.27	.27	.27	-.01	-.02	-.01

TABLE 45

DATA FROM WHICH PER CENT INCREASE IN CHILDREN INDICATING THEY HAVE EATEN BREAKFAST WAS COMPUTED

	Number answering "no" on pretest			Number answering "yes" on post-test of those answering "no" on pretest			Per cent change		
	4th	5th	6th	4th	5th	6th	4th	5th	6th
Control Group	17	19	34	5	6	15	29	32	44
All Experimental Conditions	74	73	89	42	35	46	59	48	51
In-School Viewing	36	37	49	22	18	25	60	50	50
At-Home Viewing	38	36	40	30	17	21	59	46	53
With-Comic Viewing	43	32	45	24	17	22	58	54	49
Without-Comic Viewing	31	41	44	18	18	24	60	43	54
In-School/With-Comic Viewing	19	11	20	15	6	9	79	55	45
In-School/Without-Comic Viewing	17	26	29	7	12	16	41	46	55
At-Home/With-Comic Viewing	24	21	24	9	11	13	38	52	52
At-Home/Without-Comic Viewing	14	15	15	11	6	8	79	40	53

TABLE 46

DATA FROM WHICH PER CENT INCREASE IN CHILDREN INDICATING THEY COULD LEARN ABOUT FOOD FROM OTHER CHILDREN WAS COMPUTED

	Number answering "no" on pretest			Number answering "yes" on post-test of those answering "no" on pretest			Per cent change		
	4th	5th	6th	4th	5th	6th	4th	5th	6th
Control Group	17	24	33	5	7	8	29	29	24
All Experimental Conditions	105	96	94	51	29	34	49	30	36
In-School Viewing	50	53	54	24	22	21	48	42	39
At-Home Viewing	55	43	40	27	7	13	49	16	33
With-Comic Viewing	66	54	53	31	19	16	47	35	30
Without-Comic Viewing	39	42	41	30	10	18	51	24	44
In-School/With-Comic Viewing	31	28	27	11	6	12	42	57	33
In-School/Without-Comic Viewing	19	25	27	11	6	12	58	24	44
At-Home/With-Comic Viewing	35	26	26	18	3	7	51	12	27
At-Home/Without-Comic Viewing	20	17	14	9	4	6	45	24	43

TABLE 47

DATA FROM WHICH PER CENT INCREASE IN CHILDREN INDICATING THEY HAD HEARD OF 4-H WAS COMPUTED

	Number answering "no" on pretest			Number answering "yes" on post-test of those answering "no" on protest			Per cent change		
	4th	5th	6th	4th	5th	6th	4th	5th	6th
Control Group	45	50	42	9	12	12	20	24	29
All Experimental Conditions	214	201	140	142	116	76	66	58	54
In-School Viewing	145	158	115	94	95	65	65	60	57
At-Home Viewing	69	43	25	48	21	11	70	49	44
With-Comic Viewing	126	99	77	82	63	42	65	64	55
Without-Comic Viewing	88	102	63	60	53	34	68	52	54
In-School/With-Comic Viewing	90	80	59	57	54	37	63	68	63
In-School/Without-Comic Viewing	55	78	56	37	41	28	67	53	50
At-Home/With-Comic Viewing	36	19	18	25	9	5	69	47	28
At-Home/Without-Comic Viewing	33	24	7	23	12	6	70	50	86